

Community-centred Networks and Networking among Companies, Educational and Cultural Institutions and Research

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Abstract

This article presents visions for community-centred networks and networking among companies, educational and cultural institutions and research based on blended on- and off-line collaboration and communication. Our point of departure is the general vision of networking between government, industry and research as formulated in the Triple Helix Model (Etzkowitz 2008). The article draws on a case study of NoEL, a network on e-learning among business, educational and cultural institutions and research, all in all 21 partners from all around Denmark. Focus is how networks and networking change character as a result of the modernity. Based on theories on different conceptualizations of networks and networking presented by Castells, 2000-2004; Brown & Duguid 2000; Slevin 2004, which we will discuss in relation to some of the work about communities of practice by Wenger 1998; and ‘technology stewarding’ in Networked Learning, Wenger et al. 2009; we want to present some new opportunities and challenges of networking. The analysis concerns the participation structure and how the network activities connect local work practices and research, and how technology and online communication contribute to a change from participation in offline and physical network activities into online dynamical networking. We advocate for a network where all nodes not necessarily are equally strong and not participating in the same way. Using Granovetter’s notions of strong and weak ties, we show how the weak ties can be conducive to networking and how a network can be expanded into multiple networks. Finally, we argue for our vision and plans for the future NoEL; e.g. the importance of stronger online activities. We believe that design must be based on collaborative thinking, which consists of open and collaborative sharing of resources among participants from companies, institutions and research communities interested in e-learning. We are in the process of establishing the network as focus area as part of a larger network, so it is possible with strong clusters and inter-institutional cooperation in the network. Such a structure will make communication and access to resources and access to activities from partners smoothly for all parties.

Keywords

Networks, networking, community of practice, Triple Helix, weak and strong ties.

Introduction

One of Aalborg University's main goals is to give priority to industrial and commercial utilisation of research to promote the commercialisation of inventions and distribution of knowledge and hereby give external partners the possibility to enter as co-owners of innovative research environments. In the development contract for 2008-2010 Aalborg University stresses that they will strengthen its position as a networked university (Aalborg University’s development contract 2008-2010). The goal implies both cooperation, establishment of consortiums and collaborative networks with regional, national and international educational institutions, trade and industry. Furthermore, the university will contribute to competence and industrial development in the home region of the university, the North Denmark Region. In 2006 Aalborg University implemented a new initiative called *AAU Matchmaking* with the purpose of offering regional key persons within education, trade and industry cooperation to the university. One of the tasks is to establish and coordinate networking based on specific research areas with the participation of researchers from Aalborg University and external partners.

The North Region Denmark supports visions of collaboration and networking. In the spring of 2009 an ambitious three-year knowledge-sharing-agreement¹ was made between the North Denmark Region, Aalborg University and all municipalities in Northern Jutland, where all parts committed themselves to do their utmost to share knowledge. The region supports the projects financially with DKK 10 million per year and the university add an equal amount of co-financing through research.

AAU's philosophy of networking is very straightforward, that sharing of knowledge between enterprises and between businesses and researchers will benefit all parties. It's a fast way to access the new research-based knowledge and for the research, a mean to get access to empirical cases. In practice, the networking centres on go-home meetings, informal networking, theme days and invitations to relevant doctoral defences and guest lectures. The meetings provide inspiration and specialized knowledge to the network members; areas of expertise, and the members have the opportunity to engage in dialogue with colleagues in other firms and institutions. Typically, participants are employees from companies and public organizations, where the scope and the content of the network are consistent with their professional field. Participants range from trainees and clericals to executives. In addition, the researchers from Aalborg University, and students also have the opportunity to participate in the selected network.

Networking is not new to the university, but new technologies, especially Web 2.0 technologies increasingly provide new opportunities for networking. It is therefore crucial to rethink our approach to network.

How to define Networks?

To explain our understanding of network and networking and the kind of activities, resources and infrastructures that is offered, we will look into different theories on learning and cooperation in networks: the understanding of the networked society (Castells 2000-2004); the concept of 'networks of practice' as suggested by Brown & Duguid (2000), the concept of 'communities of practice' (Wenger 1998) and 'technology stewarding' in Networked Learning (Wenger et al., 2009) and the understanding of networking in the modernity (Slevin 2004). One of the main works on social networks is Castells' trilogy "The Rise of the Networked Society" (2000-2004) and "The Internet Galaxy" (2001). Castells' theory of social networks is based on an understanding that the new economy is organized around global networks of capital, management and information and that access to technological know-how constitutes the basis for productivity and competitiveness. He writes the following:

"Business firms and, increasingly, organizations and institutions are organized in networks of variable geometry whose intertwining supersedes the traditional distinction between corporations and small business, cutting across sectors, and spreading along different geographical clusters of economic units."(Castells 2002, p. 502)

At the same time he describes the work will become increasingly individualized - or personalized:

"Labour is disaggregated in its performance, and reintegrated in its outcome through a multiplicity of interconnected tasks in different sites, ushering in a new division of labour based on the attributes/capacities of each worker rather than the organization of the task."(ibid. p. 502).

Castells uses the challenging term "networked individualism" to describe the kind of sociality, which takes place in the network society. New division of labour is on a larger scale attached to the individual employee and his /her abilities and skills, and to a lesser degree to the organization of the task. Furthermore, attaching the term "networked individualism" to social networks illustrates an interaction between on-line and off-line networks (Castells, 2002 p. 16-127) and that there is a movement from conventional physical networks in families and neighbourhoods, to personalized and privatized "blended" networks. Social networking is a new way to organize interaction between companies and between people. Involving networks is a win-win situation for all parties involved in the networks. The individual worker expands his/her capabilities and potential performance through the network (and thereby increases his/her market value), just as modern enterprises are necessarily linked in social networks because of the complexity of the production and the need for innovation.

Brown & Duguid (2000) have proposed 'network of practice' to bridge the gap between networks and communities of practice in order to describe the relationships that are too broad and diffuse to be considered a community of practice. Brown and Duguid characterize engineers in Silicon Valley as a network of practice -

¹ In Danish: Videnspredningsaftale

they share the interest in developing digital tools and services and meet at exhibitions, lectures, cafes, etc., but they belong to different companies, often in fierce competition with each other. Participants are dependent on each other in relation to getting the latest news, while they are in competition with each other. It is a sort of informal networks - and simultaneously the formal networks play an essential function and role in the more diffuse *network of practice* through meetings, newsletters, seminars, etc. The participants know that they are mutually dependent on each other, but they do not share a mutual commitment to each other, in the broader sense. Furthermore, there is not a precise boundary to other groups, but just a network of fluid and dynamic borders.

Strong and weak ties in network

Granowetter describes in an article from 1973 (Granowetter, 1973), a theory of "the strength of weak ties" in social networks. His theory was a break with former network theory, which implicitly prioritized strong ties in small and well-defined groups. However, he demonstrates, how the weak relationships between groups have a tremendous strength in relation to establishing links between nodes in a network. If A is in group X, and B is in group Y, then A will have access to the entire group Y, if there is established a connection between A and B, and this extend A's relations and outreach radically (exactly what is utilised in social networking sites). The importance of "weak ties" is very interesting to study in relation to triple helix networks, where the network relations are characterized precisely by varying degrees of strength.

An example of a network based on the principles of strong ties is the theory of learning in communities of practice. The concept of communities of practice is generally associated with Etienne Wenger's work from the mid nineties onwards, where he launches the theory of communities of practice (Wenger, 1998; 2004). For Wenger the network is not necessarily contrary to the ideas of communities of practice. Indeed, Wenger characterizes a network with strong ties as a community of practice:

“Communities of practice could in fact be viewed as nodes of “strong ties” in interpersonal networks.” (Wenger, 1998, p. 283)

Wenger adds that the difference between networks and communities of practice consists of the difference in their purpose. In Wenger's theory of communities of practice, the interest is to understand what is being shared and learned and what the cohesiveness of communities of practice is. In his later work Wenger is also keen to describe how to design a framework for communities of practice and how the communities of practice can be emerged, thrived and maintained (Wenger et al., 2009). A community of practice is characterized by three elements: mutual engagement, joint enterprise and a shared repertoire (Wenger, 1998, p. 72 ff). A network, by contrast, is characterized by related units, which can be both people and resources, e.g. links between learners, between learners and teachers, and between a learning community and its resources (Jones, 2004). A network is focused on establishing links and relationships, while a community of practice focuses on establishing a *joint enterprise* based on the existence of a *mutual engagement*, "a good chemistry," a commitment to each other, each other's diversity and social complexity. Communities of practices are also bound together by a shared enterprise - it can be very concrete, e.g. a common project and something you want to produce together - or it can be abstract and attached to an idea, e.g. development of innovative educational solutions that can be used to re-design teaching practices. Over time a *shared repertoire* will be developed such as common language, common concepts and common routines, communicated as stories of events, through artefacts etc.

Trying to understand the relationship between communities and technology Wenger uses the term *technology stewards*:

”Technology stewards are people with enough experience of the workings of a community to understand its technology needs, and enough experience with or interest in technology to take leadership in addressing those needs. Stewarding typically includes selecting and configuring technology, as well as supporting its use in the practice of the community.” (Wenger et al. 2009)

Technology stewards are people in the community, who has taken the role of addressing how the technology can serve the community and who has a special interest in the interactions between human and technology. The technology steward is not necessarily a top-down defined role, but often self-defined and emerged in the organization. Characteristically, they are in-between several practices and trying to connect these practices by shaping technology and practices to each other. In Wenger's concepts of Communities of Practice they are attending a multi-membership of practices (Wenger 1998). In a Danish context has Anne Marie Kanstrup

(Kanstrup 2005) suggested the term local designers as the kind of actors bringing the technology to work to serve the networks or the communities of practice.

Online communities and networking

Since the wide breakthrough of the Internet in the nineteen nineties (Finnemann, 2005) has users from around the world communicated and formed communities on the web. The first studies of these Internet communities were mainly based on online news or discussion groups, which one of the first and most famous definitions of *virtual communities* also bore evidence of. Rheingold defines virtual communities as:

"Virtual communities are social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace." (Rheingold, 1993, p. 5)

During the 1990s the research within this field was dominated by studies on strangers (e.g. people who did not know each other beforehand), who formed communities on the Internet, based on interest-specific topics or activities, such as Howard Rheingold's study of the use of the conference system 'The Well' (Whole Earth 'Electronic Link') (1993), Sherry Turkle "Life on The Screen" on the use of multiplayer games on the web (1995) and Nancy Bayms comprehensive ethnography of an online community consisting of a group of soap opera fans (2000), just to name a few. Common to these studies and others were their focus on the possibilities to form new relationships through online communication (Benkler, 2006, p.359), an aspect that is also in Rheingold's definition above. According to Rheingold, and others, the notion of virtual community is not to be dismissed as a technological, cyberpunk fantasy in which people increasingly live chained to their computer, experiencing life through dehumanizing technology. Indeed, Rheingold argues eloquent about the passionate character of his on-line relationships within the virtual communities.

Potentials in online networking

Online networking has added a new set of potentials in relation to the organization and maintenance of networks. Usual patterns in relation to the temporal relationship are influenced, as online networking is not dependent on the participants operating within an 8-16 hours working day. Asynchronous media holds an opportunity to create greater flexibility to communicate and to interact - both within each day, and in fact to extend the periods in which participants can make contact with each other (interaction periods). The use of mobile and ubiquitous tools means that participation in online networking can take place anytime and anywhere. Participants are therefore not dependent on physical proximity, but may participate in the networks without being physically near their collaborators - and it can be performed in transit or moving from one place to another. Data inputs and outputs from the synchronous and asynchronous activities are easy to store as transcripts, logs and a variety of other forms, including archiving of video streaming, webcasts, podcasts and more.

The boundaries between content and process become more dynamic. Blogs and wikis offer elements of content, but are constantly evolving. Wikis are also an example that more people can contribute content and that this production is not necessarily controlled by an editor / editor team, but just being tested and developed further by the "mass" of users / participants. Our distinction between the tools, content and process are therefore also challenged.

Digital media and virtual organisational structures have created a need for new skills among the participants in blended networks, for instance in the production and use of both asynchronous and synchronous text forms (respectively mail, wikis, blogs, forums, discussion groups, chat etc.) Participants will also increasingly need to develop or acquire a kind of *digital literacy*, which includes the power to produce, understand, analyze and use a plurality of media for communicative purposes, such as images, sounds, animations, 3D, etc.

The ability to work online gives - compared to traditional networks - altogether a wide range of opportunities to move and cross boundaries (Dirckinck-Holmfeld et al., 2008), and make simultaneous demands for new and more skills, among the main forces behind network and in the ordinary participant.

Network contra networking

The Internet is a communications technology that allows a many-to-many inter-networking independent of time and place and thus leads to deep and wide-reaching changes in our communication patterns, ranging from the most personal and private areas of everyday life to changes in public sector organizations.

In Castells' understanding networks are flexible forms of human relations that involve decentralized decisions, provide space for individual participation and promoting horizontal communications (Castells 2001). Castells understands many-to-many networks as building blocks, using the Internet to hold together communities, organizations and personal lives (ibid.). As a consequence a simultaneous dissemination of otherwise fragmented information gives rise to information flows of unprecedented scale.

In the article "The Internet and Networking" Slevin breaks with Castells understanding of Internet-based network (Slevin 2004). He argues that networks and networking changes character as a result of modernity. While the traditional network is based on local experience and face-to-face communication, modern networking involves various interrelated interaction situations through the latest technology and offers a radical extension of knowledge of the relationships in time and space and can only be compared with traditional networks superficial (ibid.). Modern networking requires an entirely new terminology and a new way of thinking. Slevin challenges the metaphor *flow of information*, because it gives associations to water flowing down a hill. He says:

"By using the word *flow* to describe the spread of information over time and space makes it difficult to understand the differences between pre-modern and modern forms of networking².
(Slevin 2004, p.55)

Furthermore, Slevin notes the difference between the term network, which he understands as something relatively static, and the term networking, which denotes a more active skill that all participants must contribute. By viewing cooperation as a plurality of diverse compounds in providing opportunities for networking you denote both the actual physical connection and the symbolic exchanges across time and space

NoEL

As a starting point for a discussion of visions for a modern network, we will hereafter describe the experience of a specific network at Aalborg University. The network on e-learning (NoEL - Netværk om e-læring) is a private-public-network in which 22 companies, educational institutions, libraries and two universities collaborate in order to develop and communicate their experiences and practices with e-learning. The companies both count bigger and smaller production companies as users of e-learning and software and media houses as producers and providers of e-learning. The network ran for 18 months from February 2008 up to July 2009 as a project funded by The Danish Agency for Science, Technology and Innovation and coordinated and administered by e-Learning Lab, AAU. The partners were co-financing by man-hours. Today NoEL is a part of The knowledge-sharing-agreement at Aalborg University.

Aims and visions

The aim of NoEL is to bridge the gap between business, research and education and to facilitate close contact with the researchers and their specific competence in *e-learning*. The network serves as a peer-to-peer network with a group of core businesses and institutions. These core participants are also co-financing the network (through man-hours put into the project). The aim is that NoEL will contribute to several companies and institutions taking e-learning into use, and that e-learning methods are developed and qualified. Furthermore, that research is related to practice and business needs. In that sense the network should provide a win-win situation for all participants.

Triple Helix

To illustrate how we see the overall cooperation between government, industry and research we will make a short detour and introduce the Triple Helix Model developed by Etzkowitz and Leidesdorff (1997), which describes a dynamic cooperation between government, research and industry. The aim is to contribute to the development of a knowledge society. In cooperation the political system must take an active role and help facilitate the relationship between research organizations and industry by showing a direction, create markets and start programs. Research institutions should create research platforms and establish collaborative projects. Industry must contribute with market knowledge, financing and engage in collaborative projects. A Triple Helix effort will provide opportunities for both new jobs and innovation. (Etzkowitz 2008).

² Authors translation

Lessons Learned from the NoEL Network

Generally, NoEL participants are eager to share knowledge, data, tools and help to create a knowledge environment, but there is also a reluctance to impose him/herself or his/her business the extra work, it will give attaining and sustaining virtual collaboration. In the project period we have communicated via Moodle, which is an open source LMS system that supports the network's basic idea of collaboration, communication and learning in digital communities. It provides features as sharing of files, news, discussions, the establishment of cooperative alliances. In addition you can add news and resources, it is possible to subscribe to relevant blogs, wikis, and a common calendar as well. Further more, discussion forums can be created if needed. We had to admit, that the online part of the network has not been very active. Moodle has more or less had a function as a mean for the organisers to distribute information and as a resource archive.

Throughout the project period, we have applied user-driven activities (workshops, future workshops) and interviews, to identify the participants need for networking and cooperation, both virtual and physical. Among other things, we carried out a series of qualitative telephone interviews with 6 representative network partners in the autumn of 2008. The aim of the study was to gain more knowledge of what types of network the partners wanted, including which partners they wanted to network with, which activities and on which platforms (virtual / physical) they wanted to network. A recurring response was that there was a strong desire to network with other types of organizations than the organisations, which they represent themselves.

“We need a network with participants who are not like "us", but coming from different types of businesses and organizations. NOEL is good to hold the chance, you do not participate to find something specific, but you meet some people and get some experience, located in the cranium. Then when you will need it, you know who you can contact. A network built up faster when you also meet physically, but the same is possible on the web. It is necessary to combine the physical meetings with virtual meeting types. (Faurholt, IT Project Manager University College South)

“We participate in the network as NoEL primarily to get inspiration and see the approaches to e-learning as we do not even have come, but of course also to share our experiences with others. Today things are indeed so fast that you first read about it when things have happened. In a network you are participating, while things are happening. We are sharing common issues with some companies, but it can also be interesting to see all other firms' frameworks of e-learning and thus be inspired. At the same time you also get friends, you can call or connect, if you have questions. (Vibeke Gustavsson, Advisor, Danfoss)

Based on feedback and the interviews with the network members it is obvious that one of the reasons for NoEL's success is that the network is structured as an inter-institutional network after the "Triple Helix" model, where the public authority (here: The Danish Agency for Science, Technology and Innovation) facilitates a framework and offers a variety of resources, and project funds to ongoing cooperation in running and maintaining the network. Research and higher education contribute to development of new knowledge and professional events in close interaction with businesses and institutions in general.

Most of our events have been full-day seminars, partly because many participants have long travel time to go to Aalborg, partly because we wanted to create the space for more informal conversations between the fixed program points. It has proven to be a good strategy to offer time and space to establish contacts, cooperation, agreements and relationships. Besides the 4 -6 annual meetings it has been important to have the virtual environment to communicate and collaborate between the physical meetings. All participants have had a profile in Moodle with particular contact information. There have been discussion fora with relevant topics; however, the discussions within the network have primarily taken place at the physical seminars and workshop, while the virtual environment primarily has supported the organisation and reification of the network's activities,

Due to the funding from the Ministry of Sciences there has been economic support of a kind of “technology Steward” or a network coordinator and facilitator. This role is Alpha Omega in a network as NoEL. The technology steward has to bring the various communities together, but also to bring forward the network. – to know which new information to bring, in which format and to who. Further more, s(he) has to be fluent in using physical as well as virtual networking, and to facilitate various activities, which serves as nodes in the network.

NoEL is a kind of network of practices and based on relative weak ties among the participants. It's our understanding that NoEL has been most successful in a kind of technology transfer from the universities to the companies and public institutions, and less the other way around. On the long run this is not satisfactory for the university. However, the collaboration and networking seems more productive, when it comes to the students.

The students like to learn about the problems of the companies, and to deal with these problems in their project work contributing to the development of new solutions, new understandings and concepts for the companies. The integration of students in the network is really a win-win situation. The partners get dedicated students to deal with their challenges and public, at the same time as the students get real-world cases to work on in an atmosphere of general sharing and a shared interest in getting to understand the new trends and opportunities within e-learning. In this matchmaking process, the network coordinator (technology steward) plays a very important role to set up a framework to bring these different actors together.

The Future NoEL

One of our major challenges now is to expand the NoEL activity into a dynamic modern venue where both physical and virtual activities are mutually interwoven and interdependent. The fundamental principles of the concept and design we want is therefore partly parallel to Castells words a network enterprise

"That specific type of enterprise whose system of means is constituted by the intersection of segments of autonomous systems of goals" (Castells, 2000).

Translated into design principles for online networking, this means that each section / area of the focus of the network can be both independent and part of the other networks.

"The performance of a given network depends on two fundamental attributes of the network: its connectedness, that is, its structural ability to facilitate noise-free communication between its components, and its consistency, that is, the extent to which there is a sharing of interests between the network's goals and the goals of its component " (ibid. p. 187).

One of the goals of further developing NoEL with a stronger online activities is also to strengthen each partner / focus area as part of a larger network, so it is both possible with strong clusters and inter-institutional cooperation in the network. We believe that such a structure would make communication and access to resources and access to activities from partners smoothly for all parties.

The design must also be based on a collaborative thinking, which consists of open and collaborative sharing of resources among participants from companies, institutions and research communities interested in e-learning.

The basic ideas are not to put more burdens on the partners, but rather to contribute knowledge, experiences, best practices and resources. The more resources used and produced by one partner, the more will this partner prove to be major player in the network.

As mentioned NoEL today is a part of and funded by *The knowledge-sharing-agreement*. We are organised as a focus network of BrainsBusiness ICTnorcom³ We are about to implement our experiences in the new structure offered by BrainBusiness. We will continue to organize our events in cooperation with the overall network and communicate our initiatives through their virtual infrastructure. This means a shared website, open discussion pages / fan sites at Facebook and closed discussion forums at LinkedIn. We hereby meet our partners' desire to integrate the network news and discussions into existing sites, - while we maintain contact and cooperation with other networks with areas of interest convergent with ours.

NoEL has the following objectives:

to strengthen humanistic approaches in the area of ICT in cooperative relationships with AAU Innovation,

Matchmaking and BrainBusiness, companies and private and public institutions

to develop and enhance the virtual communication and matchmaking, social networking, methopedia, debates and others to communicate and share experiences and disseminate research on e-learning

to provide a framework for shared research projects across sections and to provide a learning space for students based on the collaborations with the participants. .

to facilitate the inflow of new participants and to disseminate the network to a wider audience in order to support and expand interdisciplinary training in e-learning

³ BrainBusiness is a large private / public partnership in the ICT area, working to support and develop the ICT clusters in Northern Jutland. The goal is to foster innovation, growth and jobs by working across and create knowledge sharing and knowledge - both among firms and between research and knowledge institutions and enterprises.

Conclusions

In this article we have identified a number of the different characteristics of network and networking. Until now, network formations have largely been borne by face-to-face communication and cooperation in the physical movement of goods and services. With a proliferation of digital media and technologies - as well as a power to use them - we see a new modern way of networking.

Experience from NoEL shows that there is a desire and need to increase networking. Today NoEL is a part of the Knowledge-sharing agreement and thus has the economic basis and the professional sparring that are needed to develop strategies and infrastructure for further networking. In doing so we need to combine elements from AAU's strategy for traditional networks in the Castells sense of networks (Castells 2000; 2001) with Slevin's thoughts on networking (Slevin 2004) in a modern society where the network branches out beyond the static network, nationally and globally, and from more committed communities of practice and project forms, in which participants (and companies) share a common work and common project, to more loosely coupled networks that further acts as knowledge sharing and knowledge dissemination. We have realised that not all NoEL partners have the same way of participating, and that it is not necessarily a problem. Some NoEL partners are participating in the sense of a *network of practice* (Brown & Duguid, 2000). These participants share the interest in developing e-learning and they are engaged to follow the latest news, and sharing experiences, but they really do not have a mutual commitment in their daily life. Although it is important for us to emphasize that in our network it must be possible to have both weak ties that can be inspired and smuggled in and out of the activities *and* strong binding ties, that have joint enterprise, mutual engagement and shared repertoire. For all kinds of participants, however, it is prerequisite that the participants are committed and accountable and that all partners should gain more than they invest.

Another important thing to be mentioned is that the networks and communities of practice can hardly be developed by themselves, but that they should be supported in different ways e.g. by facilitator or technology steward and not least funding.

Building a strong network in order to create a positive spiral of development between public authorities, universities, other higher education institutions and businesses needs the public authorities to facilitate and offer a range of resources and project funding to launch co-award and to maintain these; universities and higher education plays a significant role in relation to collaborate on the development of new knowledge, to contribute to the professional events and to educate the workforce and general population, and closely interact with businesses and institutions.

The new technologies offer some new opportunities for cooperation. A continued and expanded cooperation between the research, development environments and businesses could provide an unique contribution to further develop online networking Not only a bridge which limits itself to connect the national territory - but precisely because it is digital to be global.

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