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Knowledge Management at ENI: a Case Study of Managing Knowledge in an International Oil and Gas Company

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Knowledge management at Eni: a case study of managing knowledge in an international oil and gas company

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Abstract

International oil and gas companies operate in a competitive environment where superior performance demands that opportunities be identified, evaluated and exploited to minimise time to market and create value for the stakeholders. To do so such companies rely on their human resources, state of the art technology, advanced management systems, innovation and knowledge to maintain competitive advantage. Oil and gas companies have long recognised the importance of knowledge management in achieving this goal. To the forefront of these oil and gas companies is Eni, which is one of the largest oil companies in the world. This paper represents an opportunity to gain a unique insight into Eni's knowledge management system, providing key metrics that describe the use of the system by 8,000 workers across 39 countries and describing the vision for the knowledge management system moving into the future.

Key words: Knowledge Management, Community of Practice, Oil and Gas industry.

1. Introduction

International oil and gas companies operate in a competitive environment where knowledge must be leveraged to create and capture value for their stakeholders. As a result Knowledge Management (KM) has become increasingly important within the oil and gas industry for reasons that include the complexity of the business, the wide range of activities involved, the pressure for greater environmental and social responsibility, the capital intensive nature of development projects, the need for high standardisation and efficiency of processes, the need for competitive advantage from innovative technologies and the development of new knowledge (Grant, 2013)¹. To the forefront of these companies is Eni, one of the largest international oil and gas companies.

The history of Eni began in 1953 with the establishment of Ente Nazionale Idrocarburi, a state-owned entity set up by the Italian government, which in 1992 was converted into a

¹ Grant, Robert M. (2013). *The Development of Knowledge Management in the Oil and Gas Industry*. Universia Business Review, Cuarto Trimestre 2013.

public company, Eni S.p.A., through a staged privatisation process. Today, more than sixty years after its creation, Eni has evolved into one of the top players in the oil and gas business and operates in 85 countries worldwide employing around 82,300 people. The company's core products and business lines revolve around the discovery, manufacture, transportation, transformation and marketing of oil and gas, and its main activities can be summarised under three categories as: "exploration and production"; "gas and power" and "refining and marketing" (Eni.com, 2014)². Other activities include trading, engineering and manufacturing, and the production of chemicals through the fully owned company Versalis (Eni.com 2014)³. Figure 1 provides a broad overview of the main activities carried out by Eni. The flow of oil and gas activities are differentiated and their interrelationships are shown.

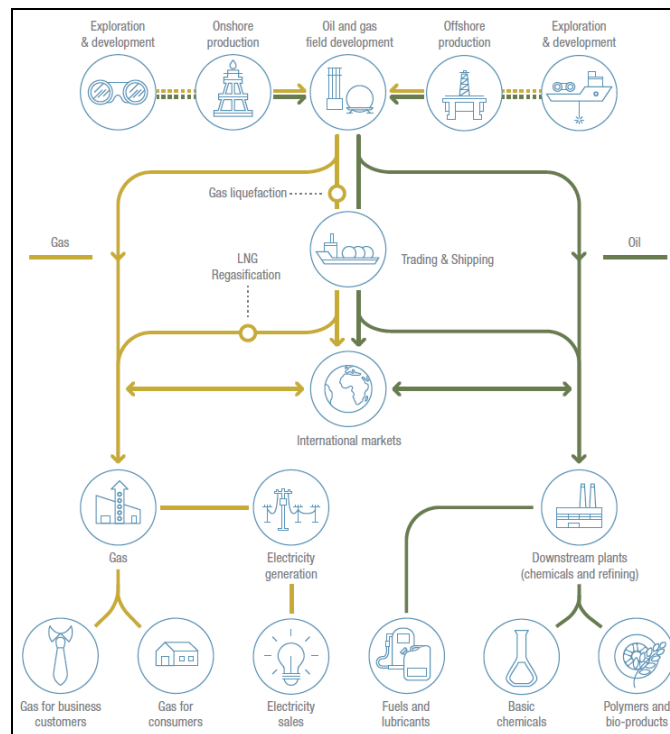


Figure 1: Overview of Eni's activities.

At the beginning of the century Eni embarked on an ambitious program to facilitate the flow of knowledge within the company, marking its first tentative steps into the world of KM. Section 2 of this paper will briefly describe the origins and development of KM practices within Eni while key elements of the current KM system will be described in Section 3. The processes implemented to monitor and evaluate Eni's KM system will be described in Section 4, while potential future developments of the Eni KM system will be presented in Section 5. Some concluding remarks will be presented in Section 6.

2. History and development of KM practices to date within Eni

The earliest formalised efforts at KM within Eni date back to the year 2000, when the company introduced "Technical Network Groups", effectively a first example of a

² Eni Fact Sheet (http://www.eni.com/en_IT/attachments/azienda/profilo-compagnia/eni_sintesi_eng.pdf)

³ Eni.com, (2014). Versalis - Eni. [online] Available at: http://www.eni.com/en_IT/company/operations-strategies/petrochemical/polimeri-europa/polimeri-europa.shtml.

Community of Practice (CoP). An overview of the main KM projects within Eni since then is presented in Figure 2.

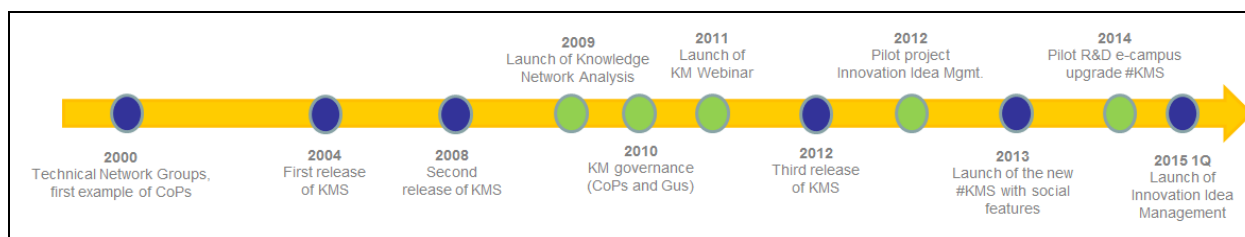


Figure 2: History of the main KM projects within Eni since 2000.

Although initiated at the start of the millennium, KM did not fully take off until 2004 when, through a pilot project, Eni began implementing KM processes with the creation of five Communities of Practice and of a Knowledge Management System (KMS), which involved not only the headquarters but also approximately 90% of its subsidiaries. Prior to the start of the project, there was a strong focus on training not only for professionals but also for managers, in order to underline the potential benefit of the system and also to confirm top management's commitment to it (Scarso et al., 2009)⁴.

The main reason why Eni implemented KM was to provide a more efficient method of dealing with knowledge and to facilitate the processes of the *knowledge cycle*, which is shown in Figure 3. The cycle starts with the generation and capture of knowledge which is then mapped in order to track content and identify interaction networks between people. Next the knowledge needs to be stored, shared and applied so that new knowledge is generated. The terms encircling the knowledge cycle refer to some of the main on-going projects and activities and these will be described in the following section.

⁴ Scarso, Enrico; Bolisani, Ettore & Salvador, Luigi (2009). *A Systematic Framework For Analysing The Critical Success Factors Of Communities Of Practice*. Journal of Knowledge Management, vol 13 no. 6 2009, pp. 431-447.

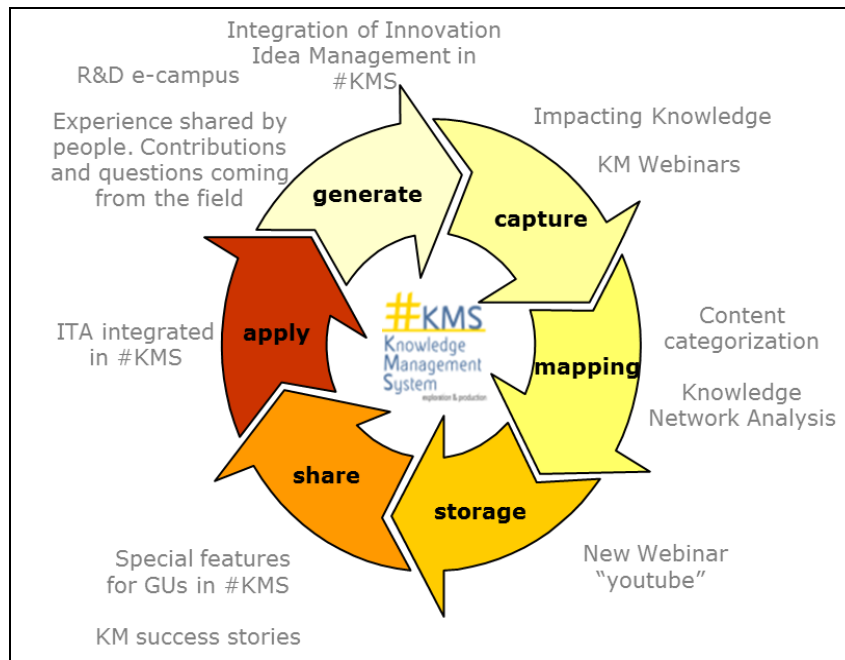


Figure 3: Primary ongoing KM projects and activities.

3. Elements of KM

Successful KM in a company can be described using a framework proposed by Edwards (2009)⁵ which categorises the key elements of KM in terms of people, processes and technology as shown in Figure 4. This framework is illustrative because it highlights the relationships and roles of the key elements of a KM system. It also illustrates the key elements needed in a successful KM initiative. For example KM would not be successful without people being motivated to sustain it and interact with it, or without a solid IT infrastructure to support it. This section considers these elements in the context of KM practices within Eni.

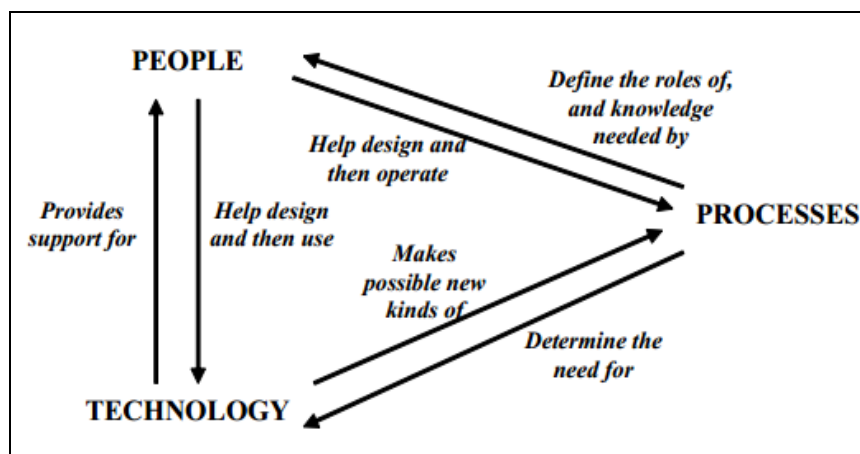


Figure 4: People-Process-Technology KM framework (Edwards, 2009).

⁵ Edwards, John S. (2009). *Business processes and knowledge management*. In M. Khosrow-Pour (Ed.), *Encyclopedia of Information Science and Technology* (Second ed., Vol. I, pp. 471-476). Hershey, PA: IGI Global.

3.1 People

KM at Eni is mainly based on Communities of Practice (CoPs) and Geographic Units (GUs) as shown in Figure 5. The main difference between the two is that while users in a CoP share the same work domain, users belonging to a certain GU are grouped on the basis of the geographical area in which they work.

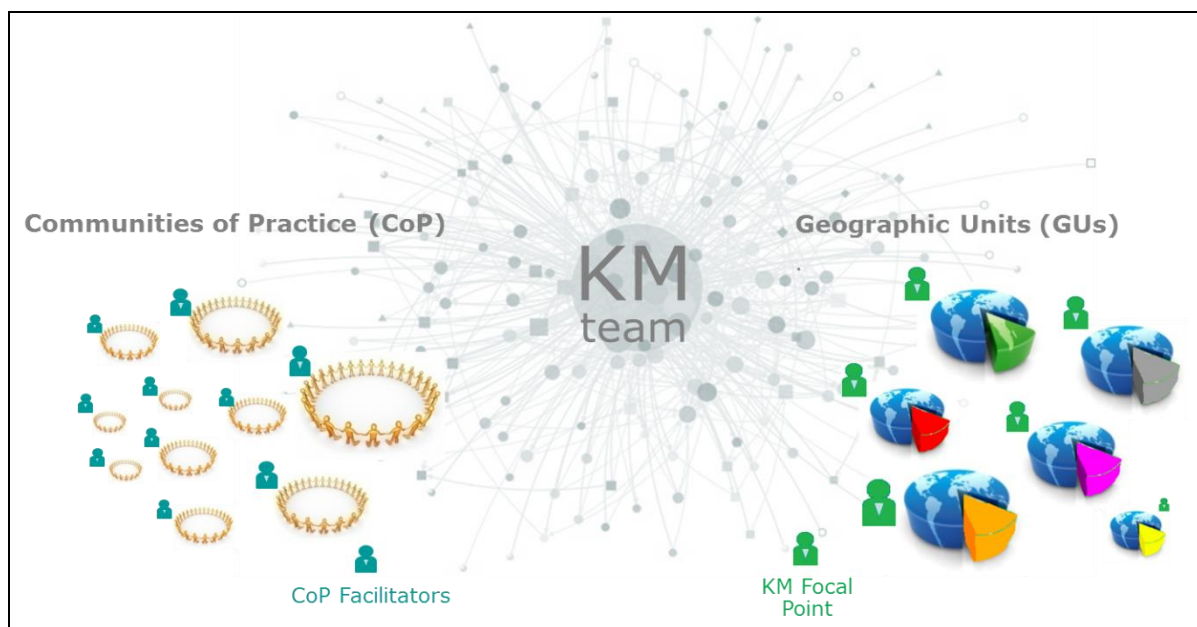


Figure 5: Main KM participants within Eni.

As of 2013 (Eni, 2013)⁶ there were 5,676 Eni employees who participated in the “knowledge community/network”, around 2000 more than in 2011, who were divided into 27 CoPs and 39 GUs. Members of the knowledge community, called followers, are not part of either a CoP or a GU, but belong to both, as each follower is part of a CoP based on his/her work domain and of a GU based on the region in which he/she is working. Examples of CoPs include *Drilling*, *Exploration* and *Geology*, which are all communities centred on some of Eni’s core in-the-field activities. Additional communities have developed for administrative business areas such as *Accounting* and *Control* and the Department of Research and Innovation, to which the KM Unit reports, introduced a *Research and Innovation CoP*. This Research and Innovation CoP actively promotes and facilitates the sharing of R&D information and knowledge throughout the entire company. CoPs are owned by the so called “professional families” within the organisation (examples of which are *Geology* and *Drilling*), who set the mission of the CoP and decide how it should carry out its activities in relation to KM. Each CoP has a different number of followers within it that include: experts, who are knowledgeable on certain aspects of the field and who actually have the duty to

⁶ Eni (2013) *Annual Report 2013*. Available at http://www.eni.com/en_IT/attachments/publications/reports/reports-2013/Annual-Report-2013.pdf > [Accessed: 11 Jan 2015]

provide a potential solution to the problems encountered by the other users; young resources and newly hired employees, who have the opportunity to access knowledge and learn straightaway about the most important themes in their CoP in order to grow faster within the company. Followers are encouraged to not only ask for information or for help but also they have the responsibility to support colleagues, if within their capability, when confronted with an issue.

CoPs work because they have no formal hierarchical structure. However, each CoP has a reference person who is a *primus inter pares*. This person is called a *facilitator* and fills primarily a supervisory and motivational role. The facilitator is also responsible for managing sensitive data and making sure that no question posed to the CoP remains unanswered. As the title suggests, he/she facilitates the relationship not only between colleagues belonging to the same professional family, but also between users from different CoPs. In addition to a facilitator, each CoP also has a *co-facilitator*. A similar approach is applied to the GUs, where the person in charge is called a *focal point* and represents KM in the subsidiaries within that GU. The focal point's role is to promote, supervise and act as a reference person not only for the people within the GU but also for the KM Team working at the Company's headquarters.

3.2 Processes

Edwards (2011)⁷ defines the process aspect of KM as “implementing new ways to work or to build in what you want to achieve, in both cases to achieve KM objectives”. The knowledge cycle was already presented in Figure 3 and the main projects and activities for each step will now be examined. Two aspects of KM which are central to a successful project: knowledge creation and knowledge sharing will then be examined in greater detail.

The *knowledge cycle* begins with the generation of knowledge within the organisation usually through the sharing of people's experiences in the field. This may be in the form of contributions or questions uploaded to the portal, but also through initiatives such as *Innovation Idea Management*, which is a project of idea co-creation through a collaborative platform, and the *R&D e-campus* project, which is in the process of being established and will provide an internal open learning e-campus specialising in topics of relevance to the oil and gas business. The capture of knowledge is accomplished through the #KMS Portal, which will be presented in detail later. The Portal aims at gathering all forms of *Impacting Knowledge*, which comprise of “all technical contributions having business impact”, and include, webinars, knowledge nuggets (which consist of lessons learnt and business cases), ideas and innovative technology applications. A typical knowledge nugget might describe the application of a particular technology in the field to solve a specific problem; however the details recorded are not limited to a description. In addition to a description the results of a particular application are reported and attempts are made to contextualise those results in terms of the applicability of the solution. For example a particular solution which

⁷ Edwards, John (2011). *A Process View of Knowledge Management: It Ain't What You Do, It's The Way That You Do It*. The Electronic Journal of Knowledge Management Volume 9 Issue 4 (pp. 297-306).

worked when rock drilling might work with a particular kind of rock formation but not with another, etc.

In order to support the generation and capture of knowledge, Eni also undertakes the mapping of knowledge. This valuable process involves not only content categorisation (the recognition, tracking and grouping of content) but also *Knowledge Network Analysis* (KNA), which captures and studies the interactions between the various KM users, and identifies key personalities such as *opinion leaders*, *key-players* and '*bridge-people*'. Moreover the KNA helps in designing new emerging CoPs on the basis of the actual collaboration from a bottom-up perspective. Storing and sharing activities are processes that take place through the portal and are fully integrated within it. Finally the last step involves the application of knowledge and therefore the internalisation process that the user undertakes to absorb it.

A process which is not graphically included in the *knowledge cycle* but is just as important, is the governance of the KM systems and practices as shown schematically in Figure 6. As depicted, there is a steering committee, called the *Enabling Team*, comprising of representatives of IT, HR, the heads of the professional families responsible for the CoPs, the representatives of geographic regions and the KM back office team. All play a vital supporting role in the process, especially the KM Team, which is responsible for offering the tools, support, coaching and guidance for the different CoPs and GUs, coordinating, supervising, setting and monitoring targets, promoting new initiatives and new ways of gaining/capturing knowledge. Eni's KM Team, although capable of carrying out these functions, does so in close collaboration with the facilitators and focal points.

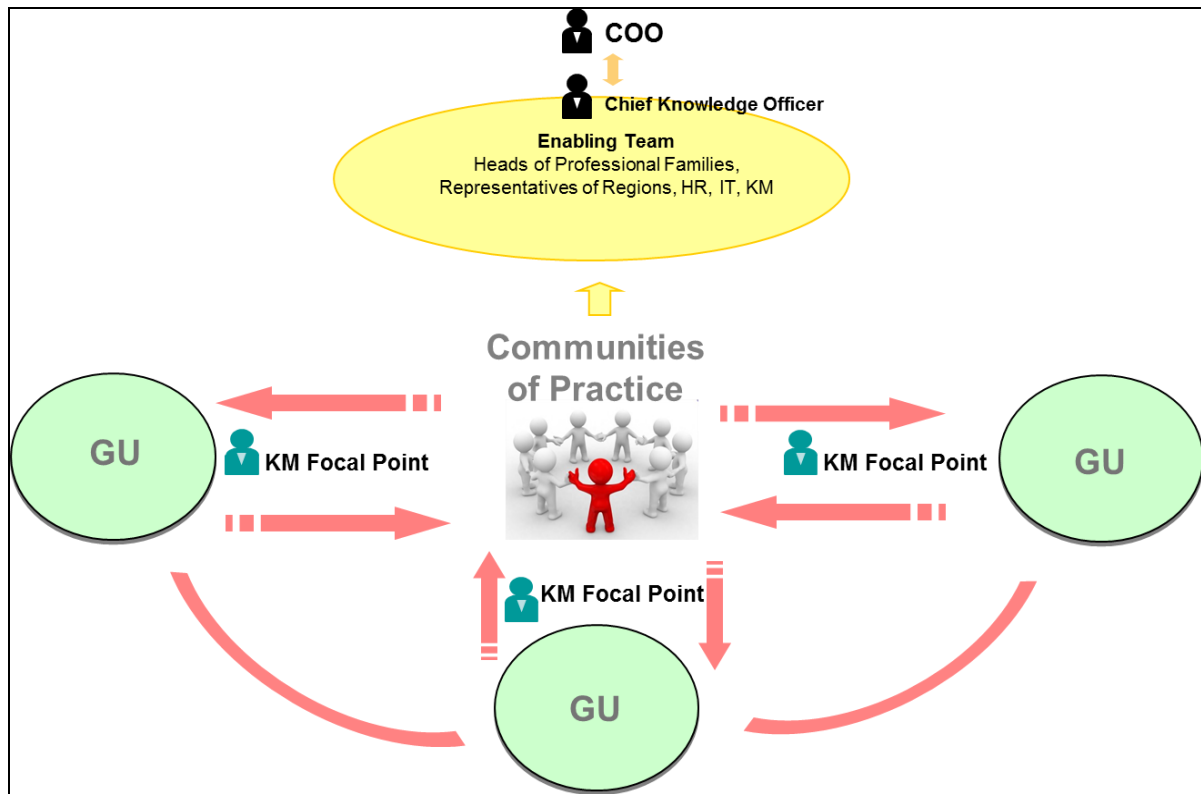


Figure 6: Governance of the KM systems and practices.

3.2.1 Knowledge Creation/Capture

As already mentioned new knowledge is either generated internally within the company, or is acquired externally, from sources outside the organisation. This sub-section focuses on knowledge generation and capture within the organisation. Eni provides an excellent example of how this is achieved and how each employee's potential is nurtured to maximise the generation of knowledge internally. As a first step we will take a look at knowledge acquisition from external sources.

Eni acquires knowledge externally in three main ways: through universities, through collaborations with other companies in the oil and gas sector and through external contractors. The R&D department, the KM Team and business areas within the company often work in cooperation with universities from all over the world, and through this collaboration, Eni acquires a reliable and constant source of knowledge. When working abroad, Eni often does not work alone; for example the company may enter joint ventures either with local oil and gas companies or with other players in the market. These joint ventures imply a constant exchange of ideas and technological insights. Finally contract staff and consultants provide an invaluable source of knowledge for the company. Such external, temporary staff are employed to carry out specialist operations that require specific knowledge and skills that the company itself may not possess. This relationship enables Eni to keep up to date with the latest technological innovations and development within the oil and gas sector.

Knowledge creation or, to be more precise, the capture of knowledge which already exists in the minds of the employees, is something that the KM Team aims at making a natural phenomenon that occurs in a user friendly way. To encourage this the KM Team sets targets relating to *Impacting Knowledge* for each CoP and each GU. As previously mentioned such impacting knowledge can come in various forms and include: webinars, knowledge nuggets (posts in the portal that are particularly relevant or contain information that has not yet been published or stored), lessons learnt, best practices, business cases and descriptions of innovative technology applications. Although there is no penalty for failing to achieve the targets, which are tailored specifically for each CoP and each GU, it has been found out that such targets play a motivational role in the capture of knowledge and that even participating in the knowledge community or helping others is motivational in itself. Interviews with facilitators suggest that this is because users are offered the opportunity to be more visible to their peers and to be recognised within the community for their contribution.

In addition to documents and posts on the portal as a mean of contributing to the capture of knowledge, webinars also play an important role. “Webinars are technical presentations, case histories, lectures or workshops broadcast over the intranet, recorded and made available on the KMS Portal”. With the approval of a facilitator or focal point and the support of the KM Team, the user willing to carry out a webinar chooses a topic, sets a date and sends out an email inviting other users to watch and join the webinar live on the selected date. As with other *impacting knowledge*, webinars also have a motivational aspect, especially for employees in the subsidiaries, as they provide a way to become known, visible and active within the organisation. Figure 7 gives an example of what the webinar calendar looks like.

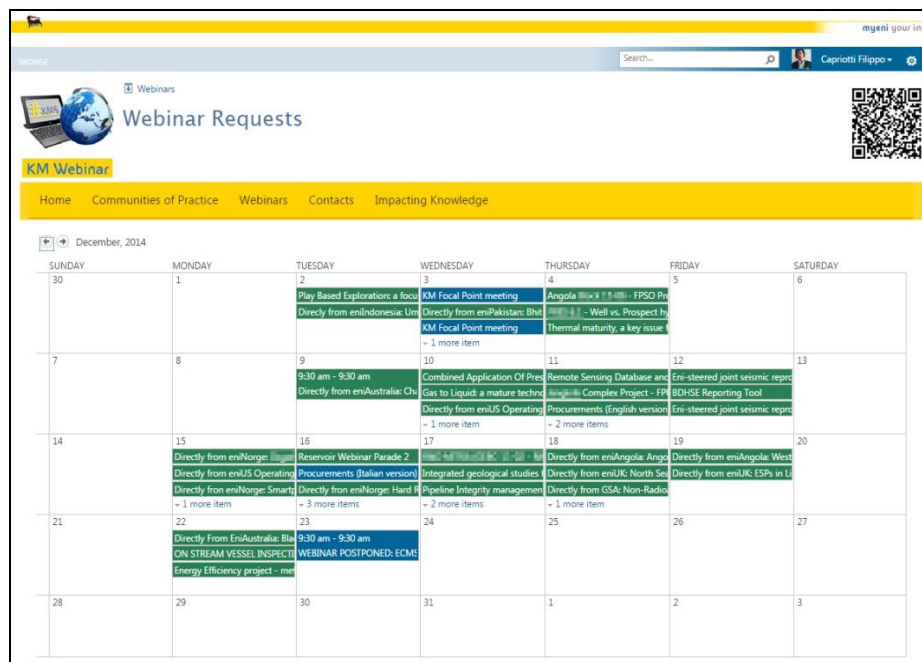


Figure 7: KMS Webinar Calendar.

3.2.2 Knowledge Sharing

The activity of knowledge sharing is also central to the KM processes. The sharing of knowledge has been made easier since the launch of the #KMS Portal in 2013. Although knowledge repositories had already been available within the Company, enabling employees to quickly locate the knowledge areas of interest, the #KMS portal not only integrates the sharing of this kind of explicit knowledge but also facilitates the sharing of implicit knowledge. Every user of the portal is able to share any kind of information, by posting it on the portal and tagging it. People's tacit knowledge has the opportunity of being captured and shared thanks to posts on the portal but also thanks to webinars as mentioned above. Although the facilitators and focal points play a supervisory role with regard to what kind of information is shared on the portal, as it is potentially available to everyone within the organization, members are mostly free to share what they find could be helpful or relevant to others within their professional family. The fact that knowledge can be so easily distributed within the organization means that everyone can have access to it, and that members from the different subsidiaries are kept up to date on the most recent topics and can potentially feel “more integrated” within the company. Another benefit of the simplicity of sharing knowledge is that it can lead to the generation of even more knowledge through peer discussion and more in-depth reflection.

It is noted that this system is only available for Eni employees. Despite this, facilitators have a responsibility to monitor contributions to ensure that no secret or high-level confidential data is posted to the portal. A facility is available where the KM Team can potentially delete such posts if they are highlighted to them. Since the launch of the #KMS system there has been no such experience of mis-use of the system according to the KM Team within Eni.

3.3 Technology

Before the launch of the #KMS Portal in 2013, the KM system was document-centred and mainly based on email discussion within the CoPs. This meant, for example, that when a person emailed a question or a contribution into three different CoPs, he/she may have initiated three separate discussions, missing the opportunity for an interdisciplinary approach to the issue and missing the synergy. Today, the portal is people-centred in the sense that, when posting an answer or sharing a topic in short posts, everyone can see it and everyone can comment, potentially initiating a conversation in which ideas and advice are exchanged across disciplinary boundaries. The portal is straightforward to use and members have their own personalised account where they can insert their own details and also an “ask me about” section which makes it easier for other users to identify the “go-to person” for a specific topic. Each CoP also has its own dedicated page and tags on the portal and members are free to follow other CoPs in addition to their own. Figure 8 shows the homepage of the #KMS portal. At the very top there are useful links to pages such as Statistics, KM Training and success stories. Before discussing the newsfeed feature, the user has an updated overview of the latest impacting knowledge and, on the right, his/her details are displayed including followers, tags followed, communities followed and so on. The “main body” of the homepage consists of a newsfeed which continuously updates itself with posts published by those people, who a user is following and which the user can like, reply, follow or promote. On the right, there is also a link to the webinars and a reminder of upcoming webinars. Finally, on the right, there is an overview of the trending tags and GUs, which keep members informed of the most discussed topics at that moment within the portal.

myeni your intranet

Search Everything

Capriotti Filippo

#KMS Knowledge Management System

KM Statistics 2014

KM Training

r&d e-campus

Value Ideas for Operations

SUCCESS STORIES

QR Code

Home Communities of Practice Webinars Contacts Impacting Knowledge

latest impacting knowledge

Add Impacting Knowledge

#IntegratedReservoir... Integrated reservoir study to outline development scenarios of a gas field: the... January 8th, 2015

#H2ZeroApplicationD... Chemical Plugging as a Remedial Job for Completion Failure January 8th, 2015

#ReservoirStudyForG... Reservoir study for gas commitments: the... Gas Master Plan case January 8th, 2015

my status

Capriotti Filippo KM Team

24 Followers

15 Tag followed

22 Communities followed

36 People followed

0 Documents followed

0 Site followed

my newsfeed

Start a new conversation

Following Everyone Mentions (1) ...

Armando The attached report provides a summary of the suite of activities performed by eni since farm-in time (i.e. 2011) to estimate the remaining potential of the... This includes the economical evaluation of the inferred remaining resources on the basis of the latest capex/opex and production profiles. #copreservoir

Field Close Out Report.pdf http://kms.eni.com/KMSFeedDocuments/... Report.pdf

Jan 8th 2015 at 16:25 Like Reply Follow Promote ...

Fulvio I wish to inform you that Chevron Corporation recently announced a significant oil discovery at the Anchor prospect in the deepwater U.S. Gulf of Mexico. Anchor is Chevron's second discovery in the deepwater Gulf in less than a year. #USA #copnegotiations

Chevron Announces Oil Discovery in Deepwater U.docx http://kms.eni.com/cops/copnegotiations/CoPDocuments/Chevron%20Announces%20Oil%20Discovery%20... Report.pdf

Jan 8th 2015 at 15:16 Like Reply Follow Promote ...

Daniela Hi all with a New Year significant dispute resolution news. Recently ICSD ruled on the compensation by Venezuela to ExxonMobil (EM) for the nationalization of Cerro Negro/La Ceiba projects. EM claimed US\$ 14.5 billion and Venezuela offered US\$ 353 million. Tribunal ruled that Venezuela pay EM US\$ 1.6 billion. Each side claimed a victory. The Tribunal's view may be understood from its decision on costs. Each side was ordered to bear its own legal costs and pay half of the arbitration costs. #copnegotiations

ExxonMobil Decision By ICSD.pdf http://kms.eni.com/cops/copnegotiations/CoPDocuments/ExxonMobil%20Decision%20By%20ICSD.pdf

Jan 8th 2015 at 15:02 Like Reply Follow Promote ...

Armando The work report here enclosed is about the reservoir study done for the development of the... in cooperation with... further to the Sacha B North-1 well results. This study performed in Milan HQ in cooperation with... is relevant to the... lease project. #copreservoir

Integrated Reservoir Study Report.pdf http://kms.eni.com/KMSFeedDocuments/... Integrated%20Reservoir%20Study%20Report.pdf

Jan 8th 2015 at 11:32 Like Reply Follow Promote ...

Show all 5 replies

Armando To complete the work, the herein recommendations have even been outlined:

1. Coring on new wells for all Sands (RCA/SCAL).
2. Interference test between wells.
3. Acid stimulation to reduce skin on producers or Hydraulic Frac.
4. Multi Rate PLT.
5. Bottom hole sample full analysis.

Jan 8th 2015 at 13:54 Like Follow

Armando I created a new Impacting Knowledge element: #IntegratedReservoirStudyToOutlineDevelopmentScenariosOfTheSachraGasField.

Jan 8th 2015 at 16:09 Like Follow

Add a reply

KM Webinar

Jan 21 2015 2:00 PM Experience of Drilling with Wired Drill Pipe in... #KMS

Feb 09 2015 10:00 AM NEW FRONTIER FOR A COMPLEX DEEP-WATER SEISMIC RESERVOIR

Feb 12 2015 9:00 AM Reservoir Management

All scheduled Webinars Organize your Webinar Webinar Archive My proposed Webinar

Webinar Service 50

Bibliographic Research-PoliTo

Trending tags

#question #EastHub #allcops #copnegotiations #Deepwater #Alaska

Trending GUs

#VENEZUELA #RUSSIANFEDERATION #TUNISIA #GHANA #Angola #NORWAY #EGYPT #KAZAKHSTAN #ITALY #USA #PAKISTAN #CYPRUS #ItalyDICS #NIGERIA #CONGO #Algeria #MYANMAR #UKRAINE #INDONESIA #MOZAMBIQUE

Figure 8: A typical homepage of the #KMS Portal.

4. Monitoring and performance of KM

Although the #KMS Portal was launched in October 2013 it is important to note that Eni KM Team had already, through previous studies, acquired significant experience with KM and how best to monitor its effectiveness. Accordingly, a series of Key Performance Indicators (KPIs) and their value to the company had already been identified and these are applied when evaluating KM efforts - see Figure 9. From a quantitative point of view, visits to the #KMS portal, webinar attendance and the number of posts, i.e. technical contributions and questions, are taken into consideration. From a qualitative perspective, the KM Team focuses on the number of impacting knowledge contributions. As previously mentioned, impacting knowledge can take various forms such as: webinars, lessons learnt, business cases, ideas and descriptions of innovative technology applications. They are at the top of the pyramid, as by definition, they have a potential impact on the business.

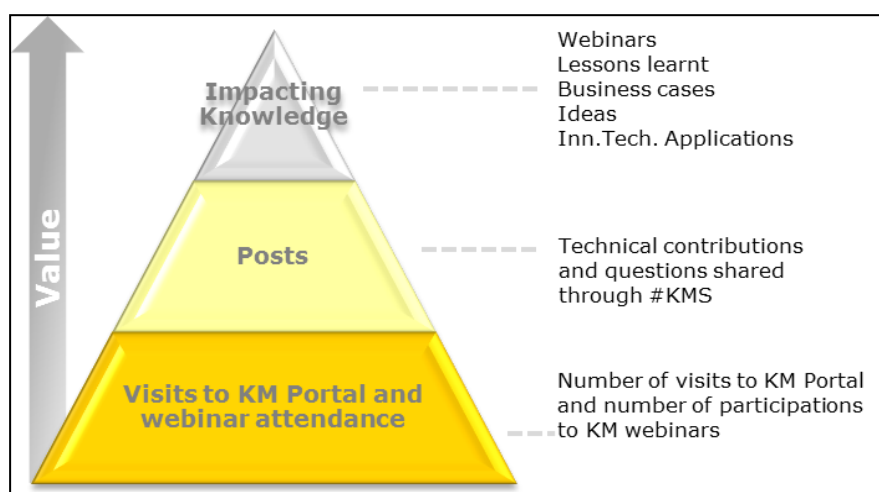


Figure 9: KPIs used to monitor effectiveness of KM.

The use of KM features and the number of impacting knowledge contributions varies depending on the CoPs and their nature. For example, KM may be more developed in some CoPs than in others, due in part to the fact that not all CoPs are at the same level of maturity and to the fact that they all differ based on the knowledge their specific work area requires. This is also a reason why, as mentioned above, targets are set individually for each CoP.

To this aim, the KM Team monitors both CoPs and GUs individually and, despite differences in terms of contributions as mentioned above, for both of them the trend in the use of KM tools shows a clear increase in 2014 compared to 2013. Figures 10 and 11 report the remarkable increase in the number of posts shared by CoPs and by GUs, respectively. This significant increase in traffic proves one of the main advantages of the portal cited above, which is that it is people-centred, and it enables followers to ask for information or share knowledge easily with their colleagues within and among CoPs or GUs.

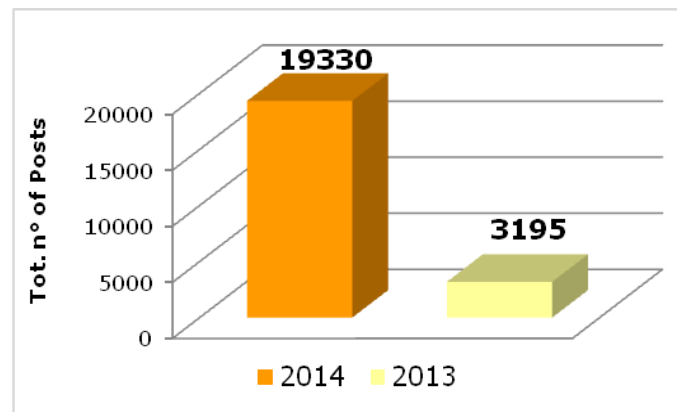


Figure 10: Traffic in #KMS by Community of Practice for 2013 - 2014.

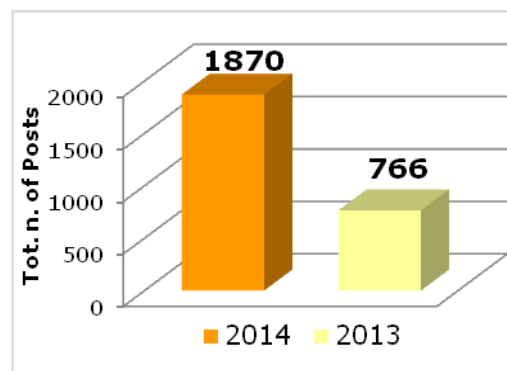


Figure 10: Traffic in #KMS by Geographical Unit for 2013 - 2014.

5. Future development of KM at Eni

KM has come a long way within Eni and it is Eni's intention to continue to develop the system. This section describes some ideas for the future development of KM within the Company, some of which are already in the implementation phase. These ideas are: (a) a KM app, (b) expansion of the webinar service, (c) creation of external networks, and (d) use of virtual and augmented reality.

(a) KM app: A new KM mobile app is now under development by Eni and is expected to be released by the end of 2015. This will consist of the core elements of the #KMS and will provide field operatives with immediate access to the Eni knowledge base across the world.

(b) Expansion of the webinar segment: Webinars are already interactive to a certain extent, as people from different locations can conduct them together, and also because there is a discussion function integrated alongside the video, allowing people to make comments and ask questions during the broadcast. The KM Team envisages that they will become even more interactive by adopting features similar to the video-sharing website *YouTube* and

being available for mobile phones and tablets through mobile apps. In addition access to webinars will be improved through the use of *Natural Language Processing* tools and techniques, which are methods of interaction between human and computer languages that will enable a more efficient use and categorisation of webinars. More specifically, each webinar will be analyzed (in real time or offline) by using software recognising specific words of interest and the webinars will be tagged accordingly. All followers within a group that deem specific tags of interest will be automatically informed of the webinar. Such tagging will make the available archived webinars, which are expected to rise to 1000 by the end of 2015, more searchable and thus optimise their accessibility by Eni employees.

(c) *Creation of external networks:* We have already seen that Eni acquires part of its knowledge from external sources, including universities, competitors and contract staff. In order to capture the knowledge that arises from collaboration with these external sources and maximise knowledge creation, Eni is in the process of creating external networks, which are based on and will be an extension of the existing internal knowledge network. This is already in the design phase, and ideally it will provide a means to share knowledge with the other entities. However the need to safeguard key Company knowledge means that only limited knowledge will be shared with these external parties. Therefore the “public” access to the portal will be subject to tight controls. Despite such restrictions, this opening up of the #KMS will facilitate the flow of knowledge with external parties and will provide an opportunity to expand the Eni knowledge community beyond the Company's boundaries.

(d) *Use of virtual and augmented reality:* Although only in a conceptual phase up to date, it is most likely that one day the #KMS will be using augmented and virtual reality tools. Augmented reality means that additional information is superimposed on a certain reality to make it more accessible to the user. For example an electronic device that would provide extra information when performing maintenance on a machine. Such information may refer to a best practice, past lessons learned and enhance the effectiveness and safety associated with the maintenance activity. Virtual reality on the other hand is a computer simulated world, which Eni believes can become a KM tool to generate and explore knowledge based on simulations.

6. Concluding remarks

This paper has presented a unique insight into KM within Eni, one of the largest oil and gas companies in the world. The Company's commitment to innovation and KM is evidenced by the fact that it is rolling out the third generation of the KM system, known as the #KMS, across its global operations. Employees in Eni's foreign subsidiaries view the introduction of the #KMS as a kind of corporate brand roll-out where they will have an opportunity to establish improved links to the Company Headquarters, and knowledge contributors will have the benefit of improved visibility throughout the company.

Any KMS is only as good as the contributions made by participants; consequently the KMS must be user friendly and people must be encouraged to contribute. The new #KMS system that was launched in October 2013 is very user-friendly and has removed some of the cumbersome quirks associated with the earlier system. In parallel employees are becoming increasingly aware that KM is not additional work that they must perform but, once integrated into their normal daily activities, is something that can make them much more efficient and allow them to take informed decisions. This has helped employees to truly engage with the new #KMS, which is showing extremely positive results to date. The real challenge now is to maintain this enthusiasm into the future. It will be interesting to see how the opening up of the KMS, albeit on a limited scale, can tap into this enthusiasm to add value for stakeholders.

As is the case with many companies, KM within Eni is evolving and becoming more fully integrated into the company and its functions. Consequently it is possible that in the future it will cease to be a separate field or business unit. Sharing or capturing knowledge will not be considered as a special or extra activity on top of the daily job requirements but will be fully incorporated within the company. This is increasingly giving to the KM Team the opportunity to focus on aspects that add value to the company, including governance and people motivation.

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