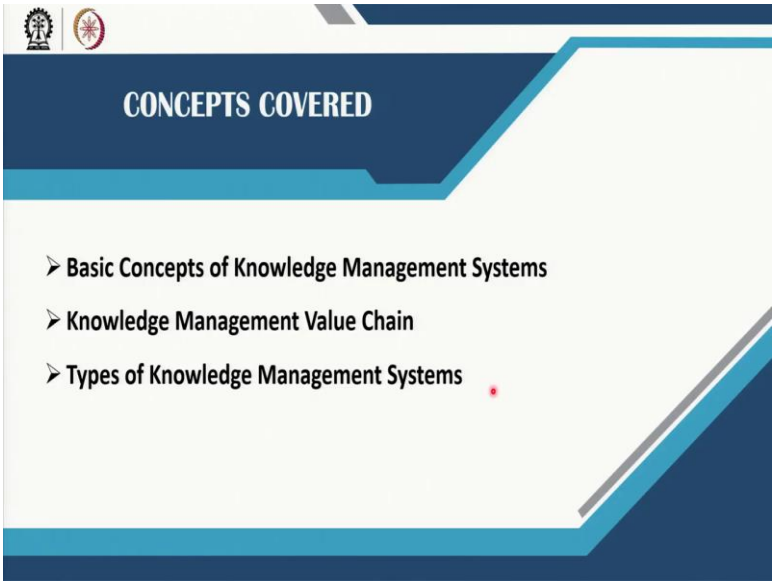
Management Information System
Prof. Kunal Kanti Ghosh
Vinod Gupta School of Management
Indian Institute of Technology, Kharagpur

Week -10
Module - 01
Lecture - 46
Knowledge Management Systems (KMS)

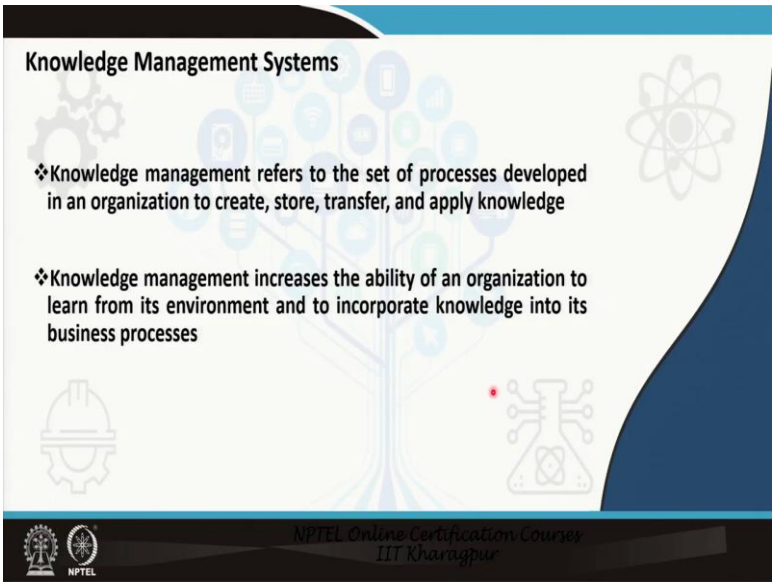
Hi, welcome to our 1st module of the 10th week on our course, 'Management Information Systems'! Today, the subject topic is 'Knowledge Management Systems' abbreviated as KMS.

(Refer Slide Time: 00:41)



The concepts that will be covered are basic concepts of knowledge management systems, knowledge management value chain, and the types of knowledge management systems, which are basically used in practice.

(Refer Slide Time: 01:11)



So, what is knowledge management systems? Knowledge management refers to the set of business processes developed in an organization to create, store, transfer, and apply knowledge. Creation of knowledge, storing of knowledge, dissemination of knowledge and application of knowledge, 4 stages, and knowledge management basically deals with management of those processes, which help managers to perform the activities related to these 4 stages.

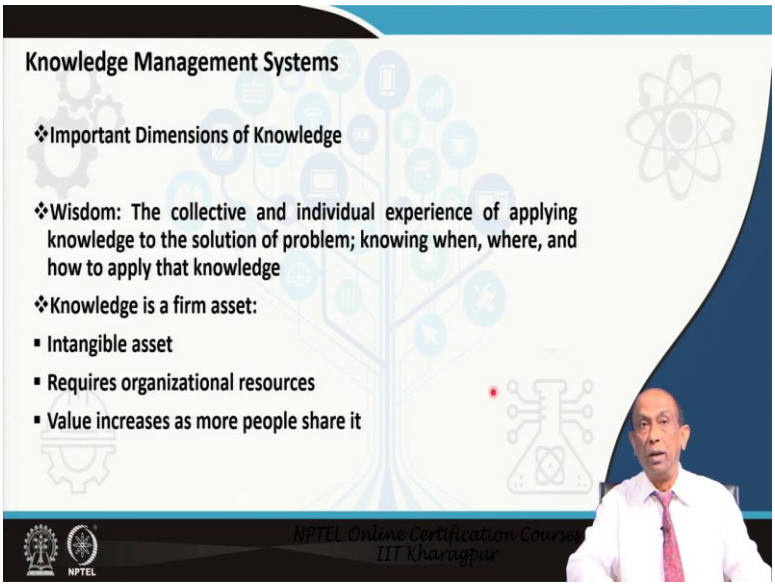
Knowledge management increases the ability of an organization to learn from its environment, particularly the experiences gathered by knowledge workers and other employees. And, this knowledge needs to be embedded or incorporated into its business processes.

(Refer Slide Time: 03:18)

So, we start with the important dimensions of knowledge. What are these dimensions? The first one is data, which is generated through various transactions or events that occur on a daily basis. And, that data is organized and processed into various categories of information. Knowledge is basically the concepts experiences and insight that provide a framework, for creating, evaluating and using the information.

And, this knowledge can be tacit or explicit. Explicit knowledge means, codified knowledge. The knowledge which can be documented and tacit knowledge is basically undocumented knowledge, residing in the brain or minds of the employees, and it is the management of tacit knowledge, which is the biggest challenge to everybody in an organization.

(Refer Slide Time: 05:22)

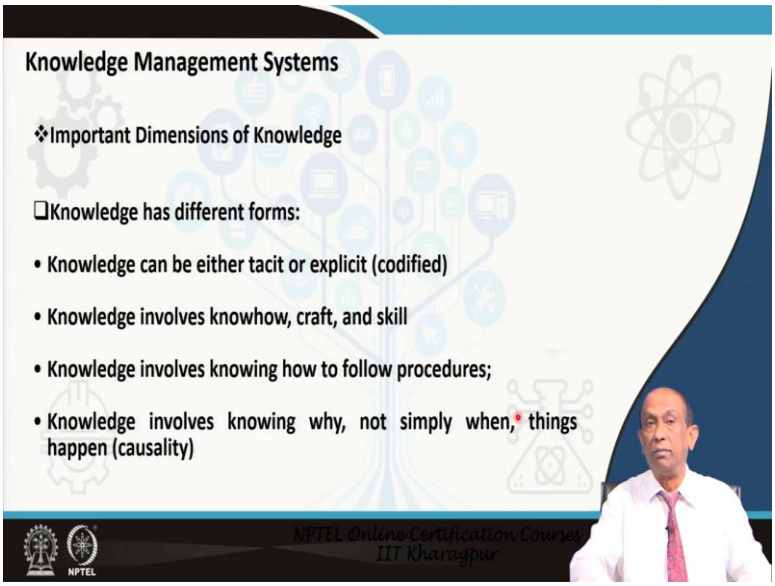


Then comes the concept of wisdom, while we have discussed that knowledge is a firm asset and that asset can be intangible, that asset requires organizational resources, to create, store, maintain, disseminate and apply that knowledge, and the more the knowledge is shared among people the value of that knowledge goes up.

So, value increases as more people share it, but then what is wisdom? And, there is some difference between knowledge and wisdom. The collective and individual experience of applying knowledge to the solution of problem is basically wisdom. So, wisdom is related to application of knowledge.

Wisdom means, we should know when to apply that knowledge, where to apply that knowledge and how to apply that knowledge? So, once again wisdom is related to application of knowledge, concerned with knowing, when to apply the knowledge, where to apply that knowledge and how to apply that knowledge?

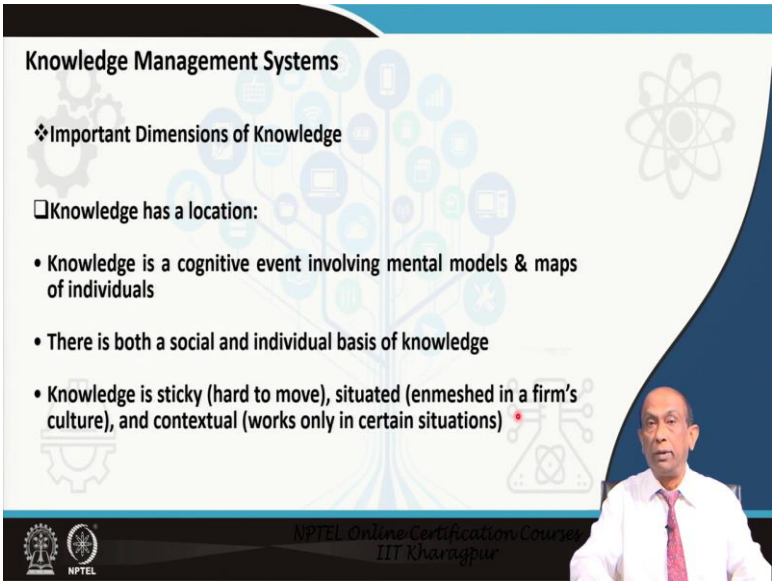
(Refer Slide Time: 07:25)



Knowledge has different forms. As, I have already told you, knowledge can be either tacit that is undocumented knowledge, residing in the brain or minds of people or knowledge can be explicit, explicit means codified knowledge or knowledge that can be documented.

Knowledge involves knowhow of people craft; it is a craft and basically requires skills. Knowledge involves knowing how to follow different procedures in doing something. And, most important the causality effect of knowledge, which means knowledge involves knowing why this thing happened not simply when things happen?

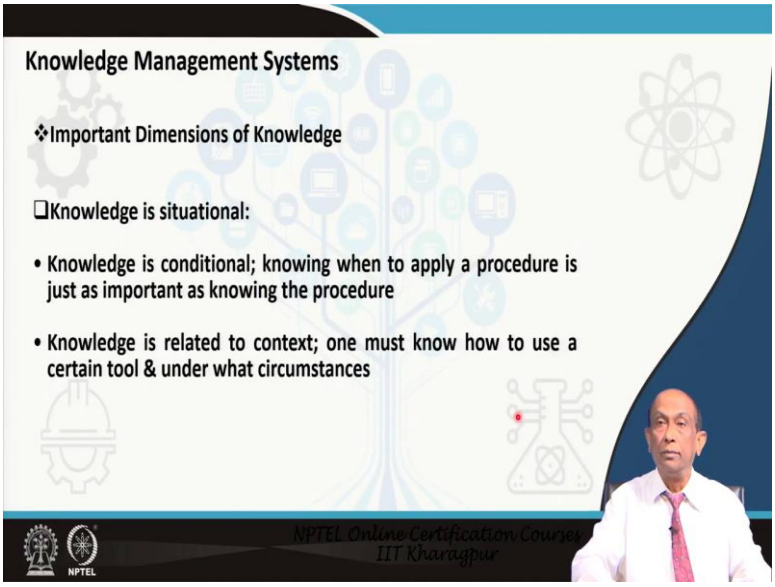
(Refer Slide Time: 09:12)



The second attribute of knowledge is that knowledge has a location means, knowledge is a cognitive event involving mental models and maps of individuals. So, basically it is a concept. There is a both a social and individual basis of knowledge is the second property.

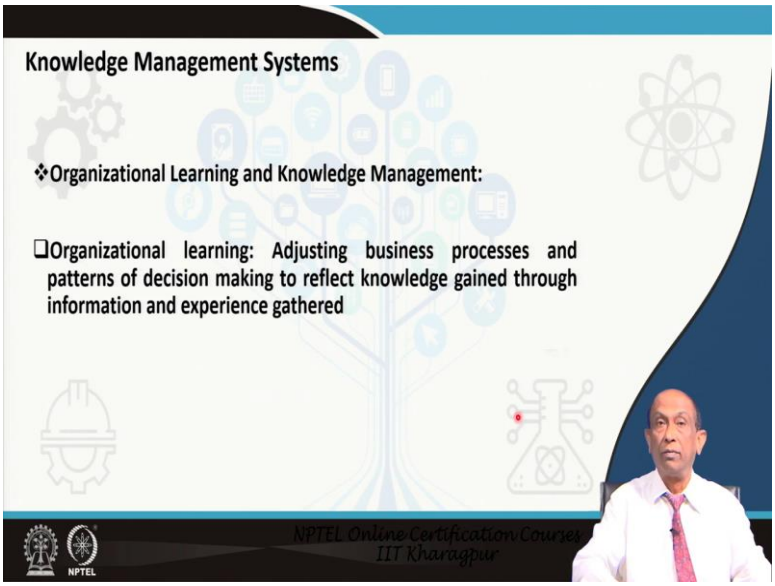
Also we need to know; that knowledge is sticky meaning thereby is hard to move that knowledge from one location to the another, transferring knowledge is a challenge. Knowledge is enmeshed or embedded in a firm's culture and finally, knowledge is contextual; that means, knowledge works only in certain situations.

(Refer Slide Time: 11:13)



Thereby, knowledge is situational, implies that knowledge is conditional, knowing when to apply a procedure is just as important as knowing the procedure. And, I said that knowledge is contextual mean one must know how to use a particular tool and under what circumstances; that is very important, that context is highly relevant.

(Refer Slide Time: 12:16)



Then, we talk about organizational learning and its relationship with knowledge management. So, what is organizational learning? It implies that all the business processes, that exist in an organization and the pattern of decision making, gets adjusted based on the knowledge, that is gained, through various information that is generated, and the experience gathered by the employees of that organization.

Employees particularly the knowledge workers, they derive lot of information, from every corner of the organization, based on the various events that take place on a daily basis, while performing their jobs, they gather experience. And, based on this information and the experience that they gain, they adjust the different business processes that exist in the organization.

They can modify their decision making style, basically this pattern of decision making becomes adaptive based on the knowledge. And, this adjustment of business processes and the pattern of decision making based on knowledge, reflects organization as a whole what it has learned, and that is organizational learning.

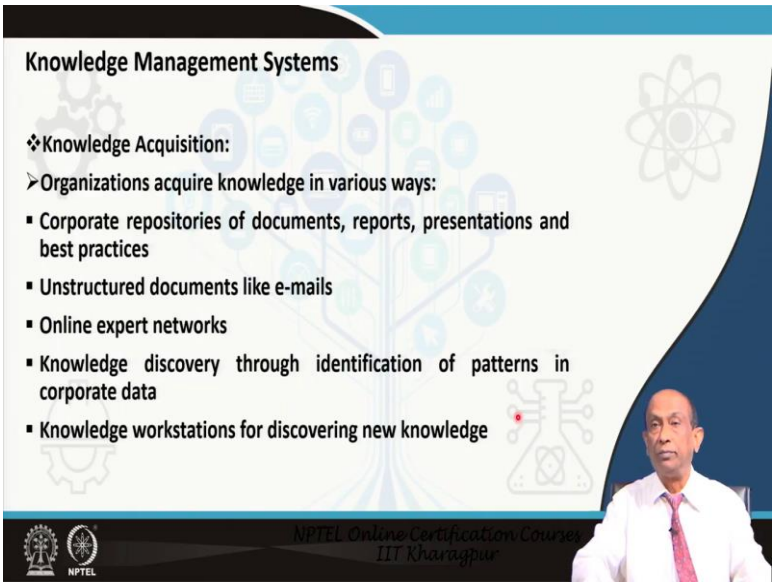
(Refer Slide Time: 14:55)

Now, if we look at the various stages of a knowledge management value chain, then we find particularly these 4 stages knowledge acquisition means, how do I acquire the knowledge, how do I store that knowledge and maintain it?

So, knowledge storage how do I spread that knowledge transfer that knowledge, disseminate that knowledge, in an appropriate manner across all levels in the organization, knowledge dissemination. And, the how and when, under what context, that knowledge can be applied, that is knowledge application.

Knowledge acquisition, knowledge storage, knowledge dissemination and knowledge application, these are the 4 important stages of the knowledge management value chain. And, this organizational learning and the knowledge management value chain is built based on the various inputs provided by the communities of practice through various communication and collaboration, mechanisms and office environments.

(Refer Slide Time: 16:55)



So, you might ask what are those communities of practice, what do you mean by that? This community is basically the group, group of professionals, who are engaged in doing similar type of work, maybe also research. They communicate among themselves either formally or informally, so, various collaborative mechanisms and in the process, they generate knowledge.

And, that knowledge which is created improves the business processes and the decision making styles of the organization; that means, this knowledge contributes to organizational learning. Organizations capture knowledge in various ways. For example: corporate repositories of documents, reports, presentations and best practices.

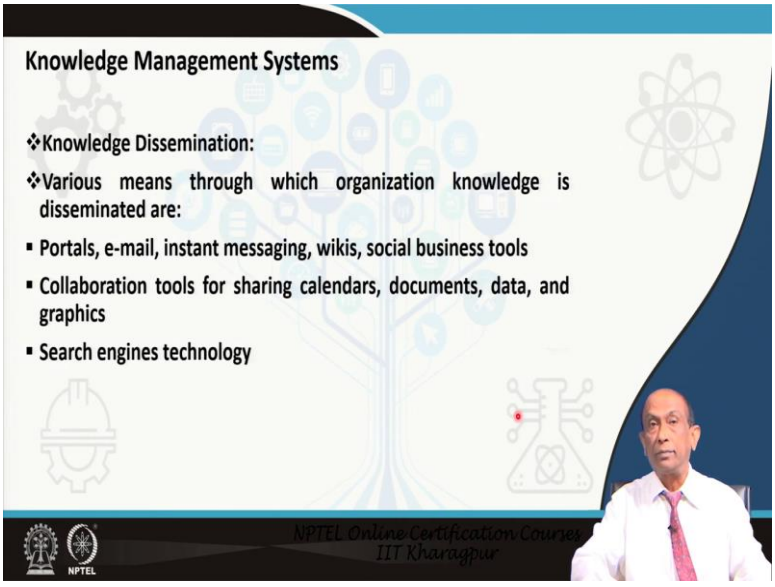
Knowledge is gathered through unstructured documents for example; emails, then there are online expert networks which contribute to creation of knowledge, then data mining and other tools help in identification of patterns in the corporate data, and that process is basically known as knowledge discovery. Moreover knowledge workstations for example, CAD, CAD work stations, they are used quite widely for discovering new knowledge.

(Refer Slide Time: 19:52)

When we talk about knowledge storage, what do we mean is that documents, patterns and expert rules must be stored through various means so that they can be accessed or retrieved and used by employees. So, knowledge storage basically refers to creation of a database.

It also refers to maintenance creation, maintenance of a document management systems, for digitizing indexing and tagging, and then knowledge management systems has wide application in the form of expert systems. I will talk about expert systems in detail in a subsequent module.

(Refer Slide Time: 21:00)



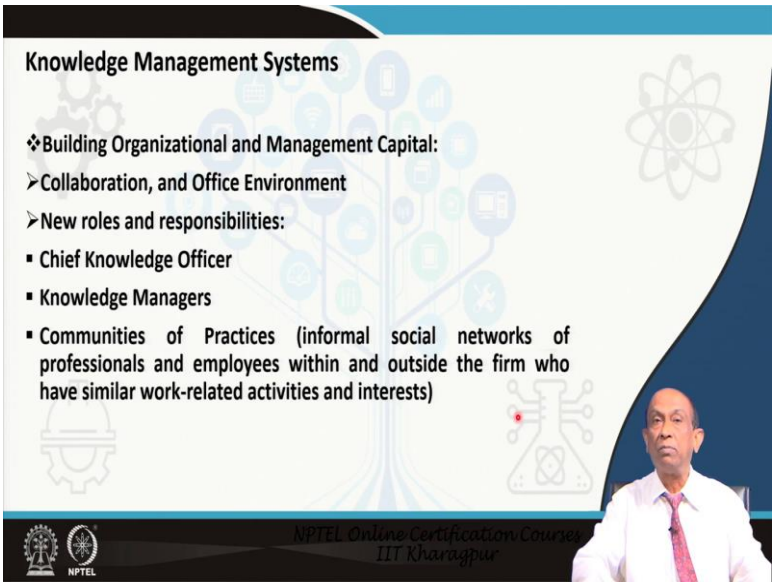
Then, we talk about knowledge dissemination. Various means through which organization knowledge is disseminated or transferred or shared across the organization are portals, e-mail, instant messaging and various other social business tools.

Knowledge thus is transferred to everybody through collaboration tools for sharing, for example, calendars, documents, data, and graphics. And, today search engines technology is widely deployed for dissemination of knowledge.

(Refer Slide Time: 22:04)

And, then the last stage is knowledge application, in order to add business value and justify return on investment, organizational knowledge must be a part of management decision making. And, this organizational knowledge is embedded in the various kinds of decision support systems and enterprise application systems, which are used for managing key internal business processes, and to improve relationships with customers and suppliers.

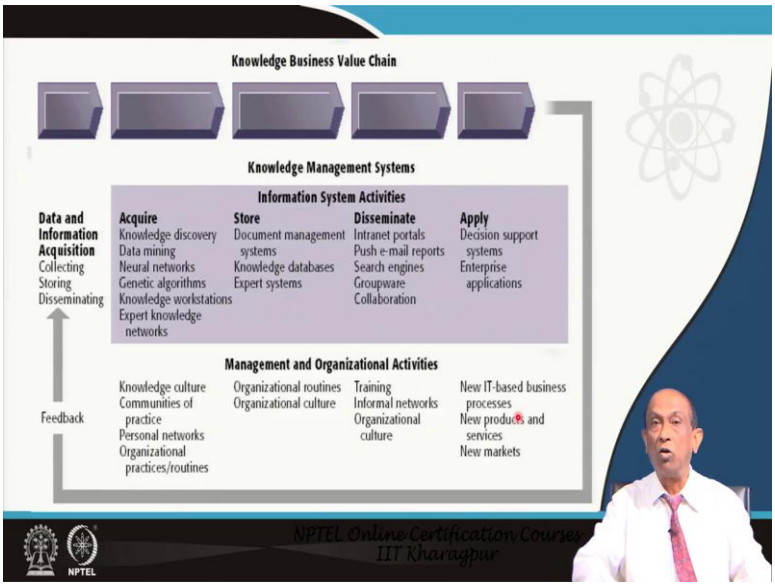
(Refer Slide Time: 22:47)



Organizational and management capital is built through collaboration through proper organizational structure, by creation executive post, creation of executive post like chief knowledge officer, knowledge managers. And then as we had already mentioned; communities of practices are the primary source for generation of knowledge, creation of knowledge, thereby building organizational and management capital.

Once again communities of practices are basically informal social networks of professionals and employees within and outside the firm who have similar work-related activities and interests. They collaborate among themselves, they communicate among themselves and generate work.

(Refer Slide Time: 23:58)



And, knowledge this is the knowledge management system. These are the 4 stages acquiring of knowledge, storing of knowledge, determination of knowledge, and application of knowledge. And, the various means through which these stages are accomplished is mentioned in here.

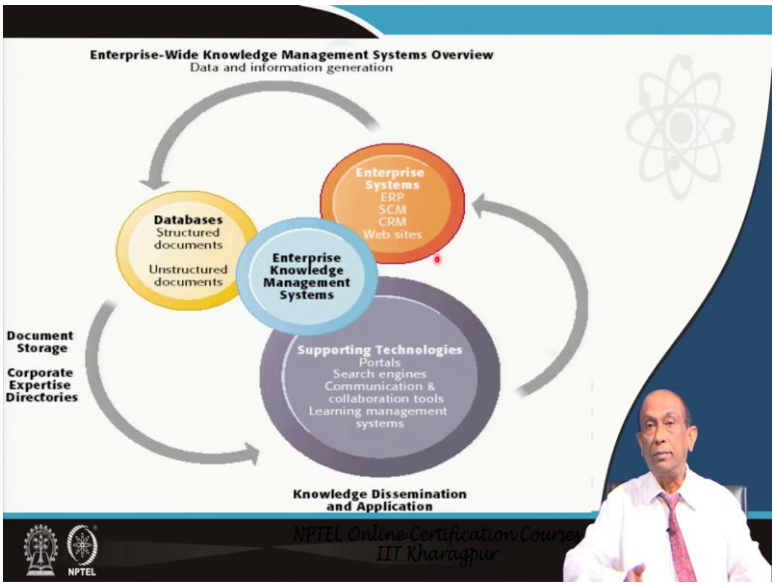
(Refer Slide Time: 24:20)

Enterprise-wide knowledge management systems; basically, this refers to general purpose firm wide efforts to collect, store, distribute, and apply digital content and knowledge. Enterprise wide knowledge management systems include, capabilities for searching of

information, storing both structured and unstructured data, locating employee expertise within the firm and supporting technologies, all these are part of enterprise wide knowledge management systems.

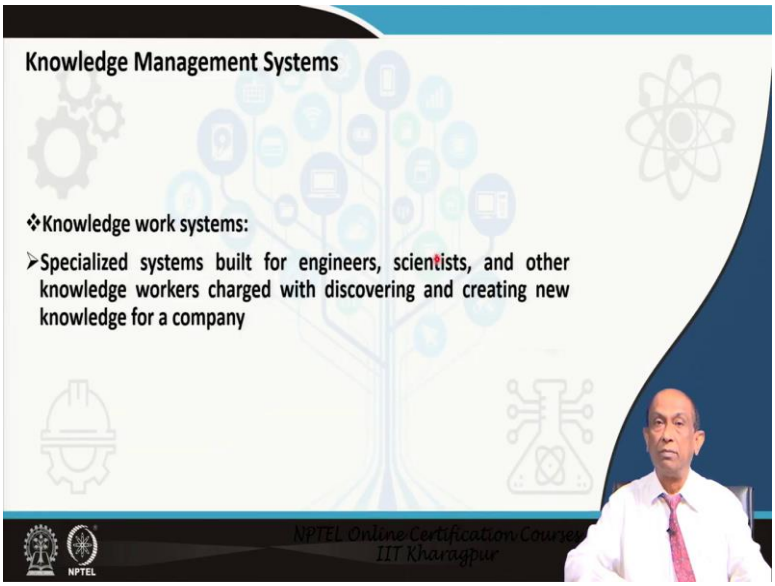
Supporting technologies means, the web portals search engines collaboration and social business tools, as well as learning management systems like Moodle and all. We will talk about learning management systems in a separate module.

(Refer Slide Time: 25:42)



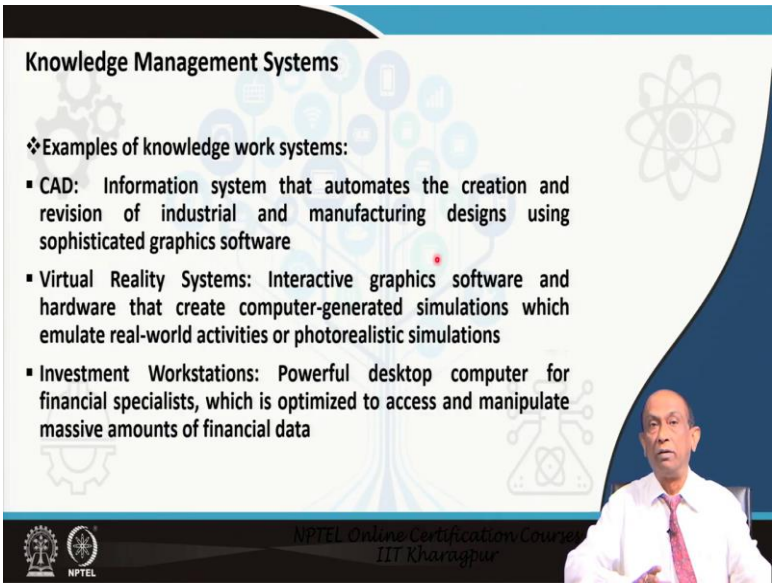
This slide shows the components of an enterprise wide knowledge management systems, wherein we talk about supporting technologies enterprise systems, and the databases which are the components of the enterprise knowledge management systems.

(Refer Slide Time: 26:19)



Then, we talk about knowledge work systems. These are specialized systems built for engineers, scientists, and other knowledge workers who are charged with discovering and creating new knowledge for a company.

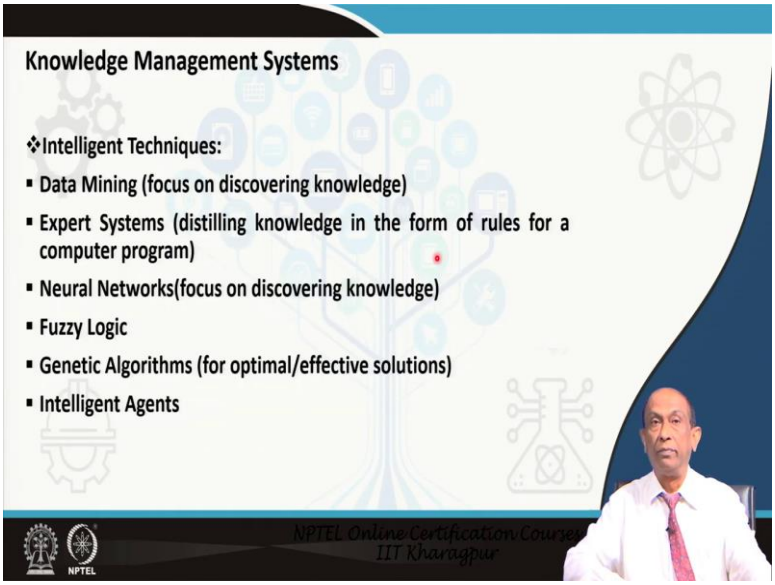
(Refer Slide Time: 26:45)



Examples of work systems knowledge work systems are CAD, virtual reality systems and investment workstations. In our first module, we have discussed in detail about this knowledge work systems. Investment Workstations basically refer to powerful desktop

computer for financial specialist, which is optimized to access and manipulate massive amounts of financial data.

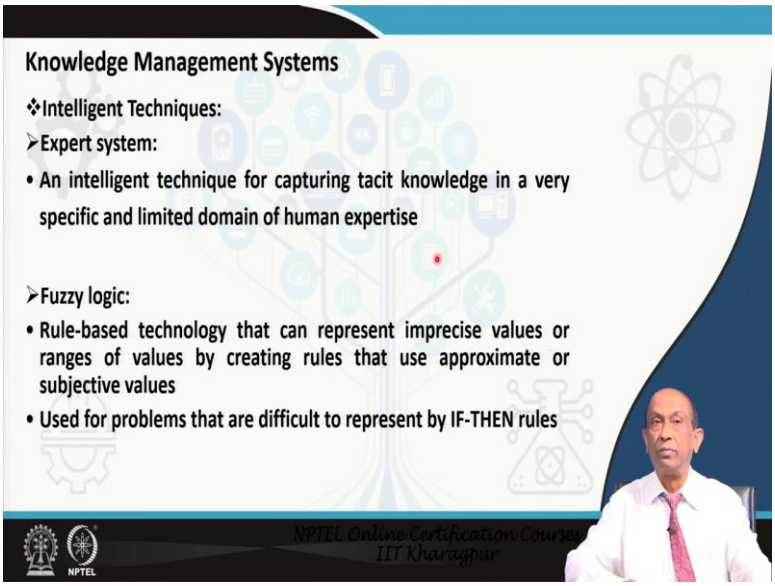
(Refer Slide Time: 27:34)



Intelligent techniques as part of knowledge management systems include, data mining tools, which is primarily the source for discovering knowledge, finding out patterns in data, then expert systems wherein we distil knowledge, we store knowledge in the form of rules through a computer program. We will talk about expert systems in another module.

Then, there are intelligent techniques like neural networks, fuzzy logic, genetic algorithms and so many others. Genetic algorithms are used for generating optimal or effective solutions.

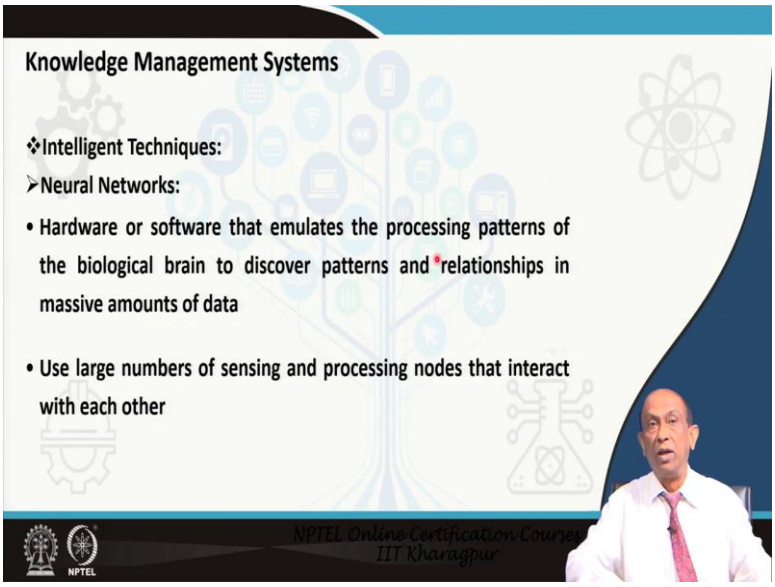
(Refer Slide Time: 28:38)



Expert systems are intelligent techniques for capturing tacit knowledge in a very specific and limited domain of human expertise, particularly for diagnostic type of activities. Rule based technology that can represent imprecise values or ranges of values by creating rules that use approximate or subjective values is the essence of fuzzy logic based intelligent techniques.

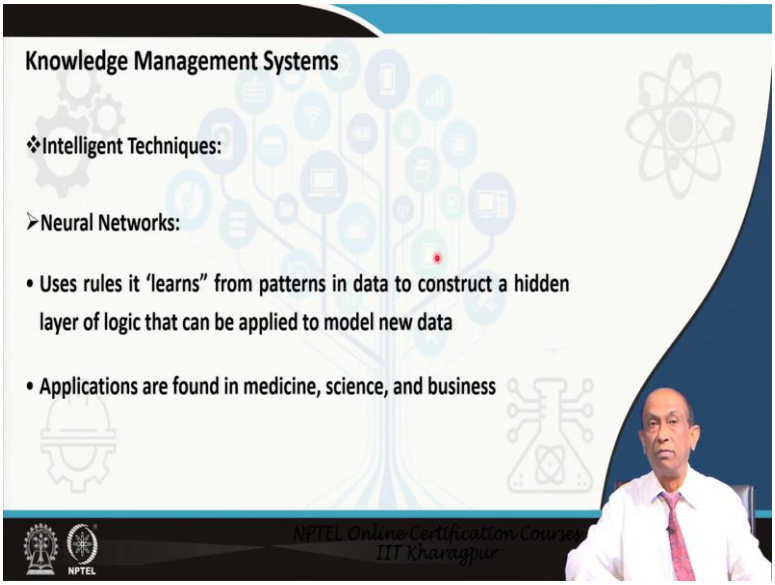
These are used for problems that are difficult to represent by if then type of rules. And, this fuzzy logic based systems have got wide applications in knowledge management.

(Refer Slide Time: 29:39)



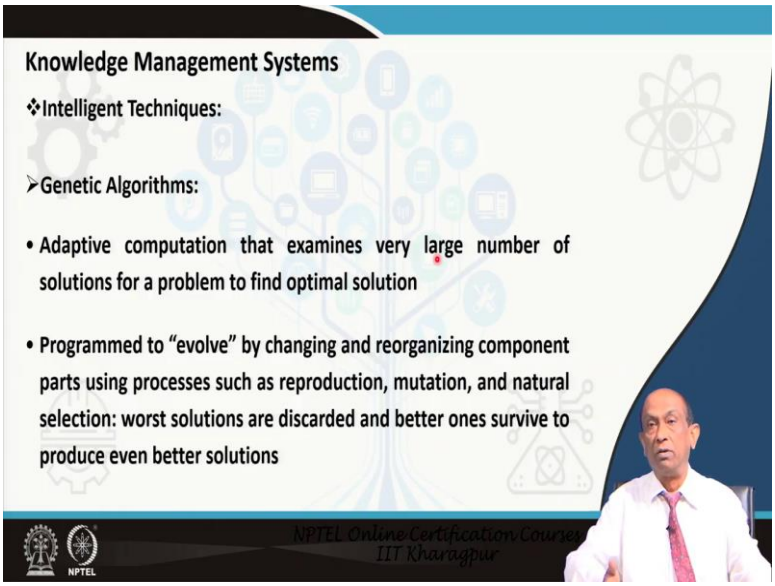
Neural networks part of artificial intelligence and analytics techniques are basically hardware or software that emulates the processing patterns of the biological brain to discover patterns and relationships in the massive amounts of data which is generated in the corporate database. They use large numbers of sensing and processing nodes, which interact with each other to generate knowledge.

(Refer Slide Time: 30:20)



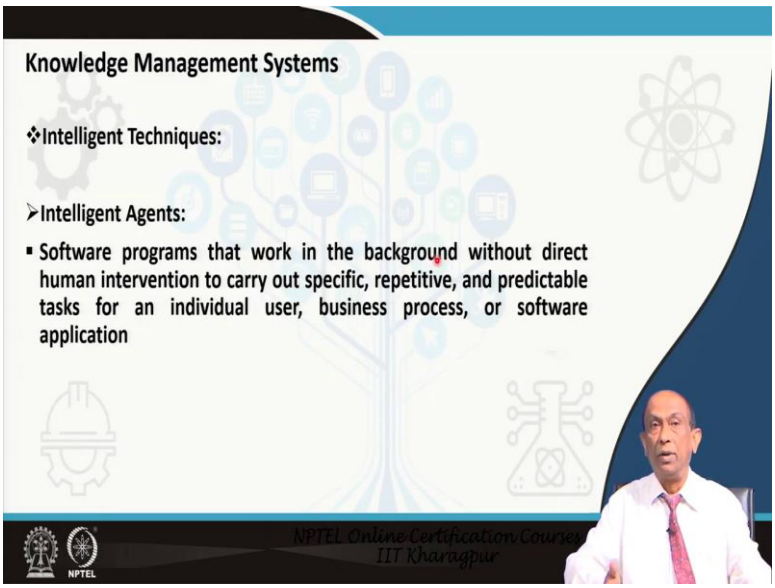
Neural network uses rules, that it learns from patterns in data and thereby construct a hidden layer of logic that can be applied to model new data. Neural networks find wide applications in the field of medicine, science and business.

(Refer Slide Time: 30:46)



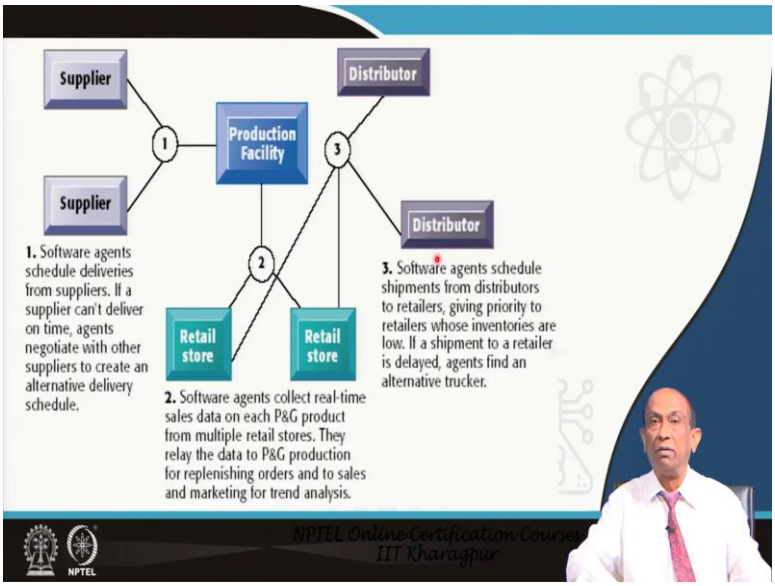
Then, we have genetic algorithms which are sometimes used for generating optimal solutions, these are programmed to "evolve" by changing and reorganizing component parts using processes such as reproduction, mutation, and natural selections; the worst solutions are discarded and better ones are selected to produce even better solutions.

(Refer Slide Time: 31:22)



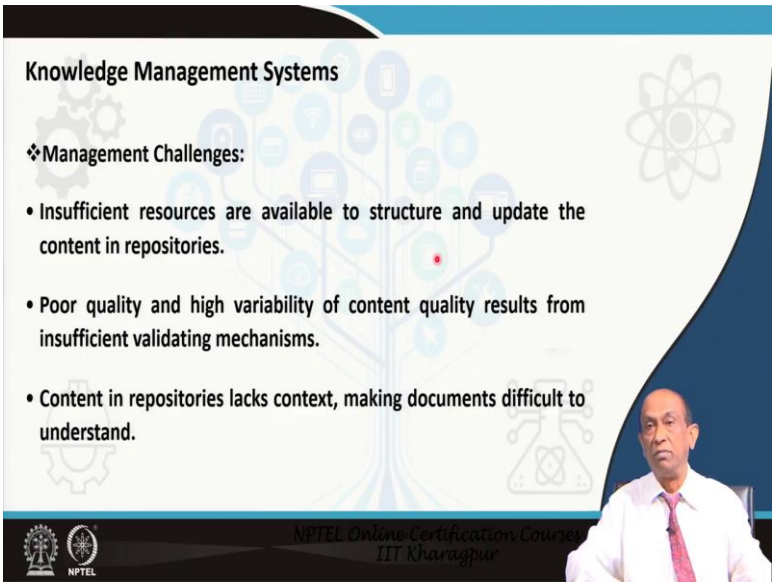
So, intelligent agents are basically software programs that work in the background without direct human intervention to carry out specific, repetitive, and predictable tasks for an individual user, business process, or software application.

(Refer Slide Time: 31:52)



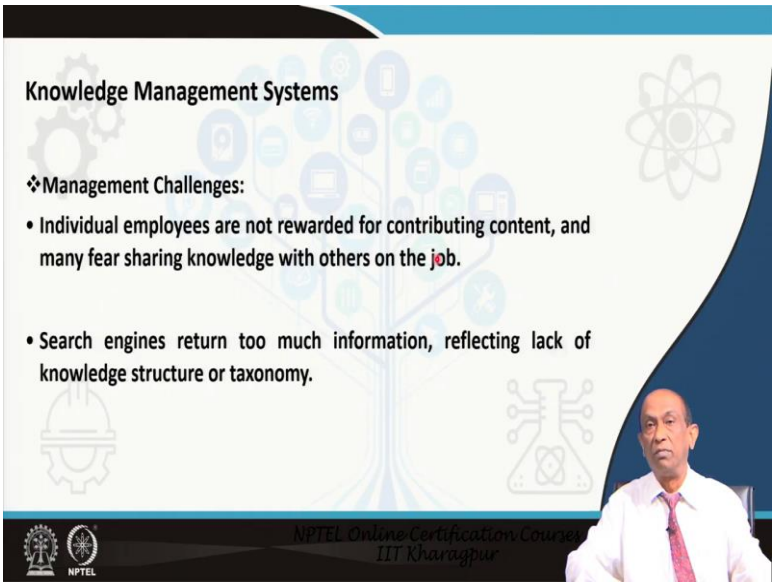
And there are various, you know, management challenges in maintaining a KMS.

(Refer Slide Time: 32:06)



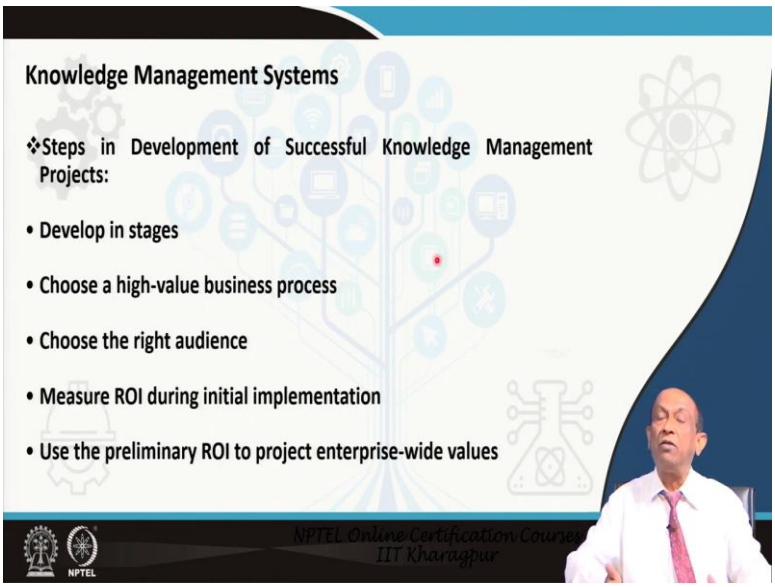
Which mainly comprises of insufficient resources, poor quality and high variability of content quality resulting from insufficient validating mechanisms, and content building in repositories sometimes lacks context making documents become very difficult for comprehension.

(Refer Slide Time: 32:39)



And, one of the important point that should be noted is that individual employees are not rewarded for contributing content, and many fear sharing knowledge with others on the job. That is why management of particularly management of tacit knowledge is a challenge. Search engines they return too much of information reflecting lack of knowledge structure or classification that is taxonomy.

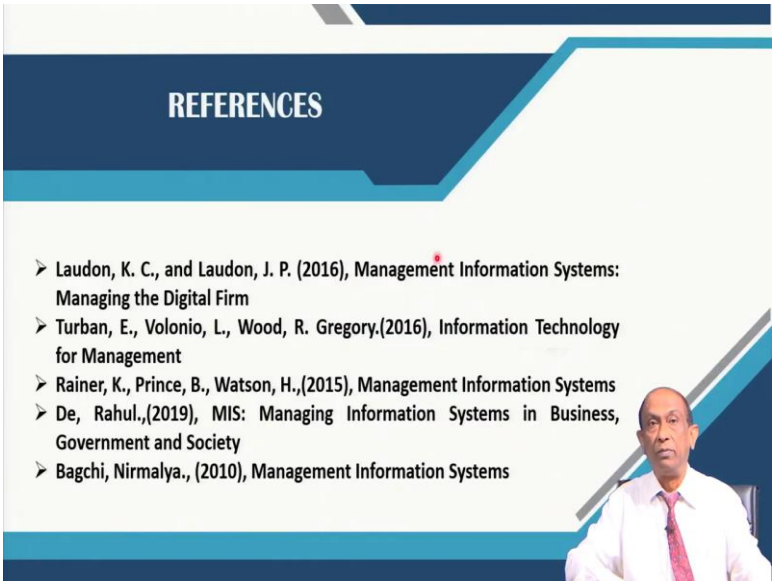
(Refer Slide Time: 33:18)



The various steps in development of successful knowledge management projects are development in stages, choosing a high-value business process, choosing the right audience,

measuring the return on investment during initial implementation, and using the preliminary ROI to project enterprise wide values.

(Refer Slide Time: 33:44)



These are the references that have been used in preparing this particular module.

Thank you all for your patience!