Lecture 14
System Development: System Testing and Development (Contd.)

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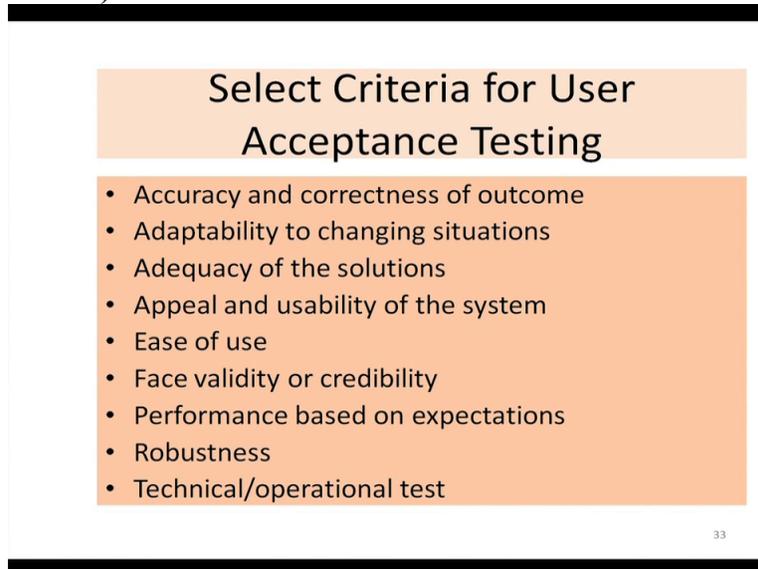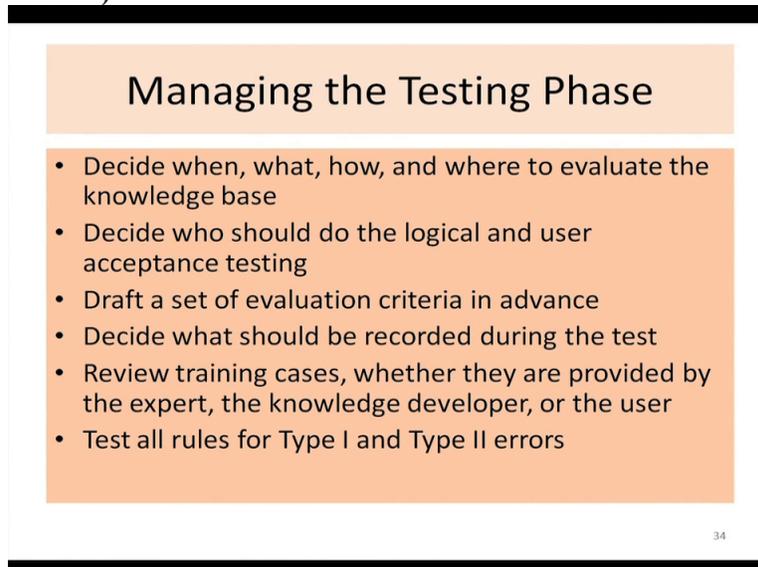

So, we have been talking about user acceptance technique in the process and what he talked about was the selecting criteria for user acceptance and testing.

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Now we have to say that how we are going to manage testing phase. Testing phase is that phase where the system is put into use and you want to test whether the test system is working well or

not ok. The idea is that once you are developed the knowledge management system you want to test whether the system is working or effectively or not.

On two accounts, one is weather the knowledge that you have created is valid in terms of its completeness, correctness ok. And second whether it is functional or not. Based on these two wide criteria you are going to decide and put it to use ok. So at the testing phase that the second phase before it is finally put to use to the users this is the second phase. So, in this phase basically you are going to decide about certain things.

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Managing the Testing Phase

- Decide when, what, how, and where to evaluate the knowledge base
- Decide who should do the logical and user acceptance testing
- Draft a set of evaluation criteria in advance
- Decide what should be recorded during the test
- Review training cases, whether they are provided by the expert, the knowledge developer, or the user
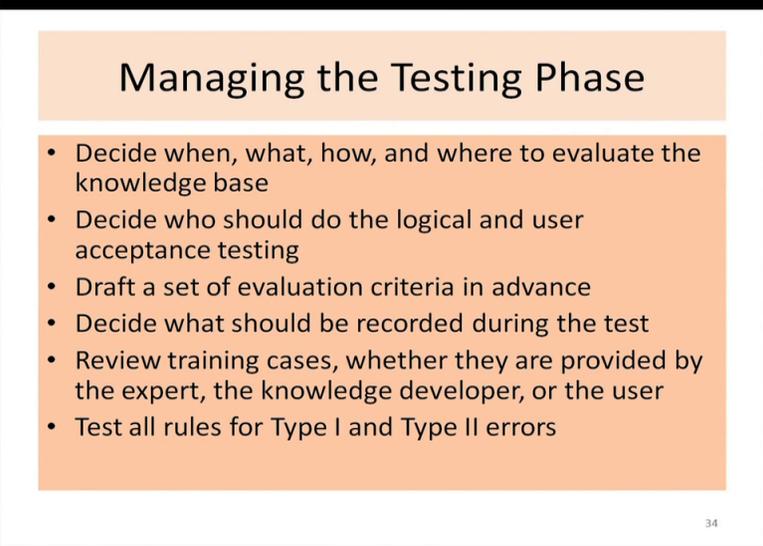- Test all rules for Type I and Type II errors

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And that is when, what, how and where you to evaluate the knowledge phase. So these questions must be answered at this particular phase that meant to evaluate. Once you put the system for operational use or before it that is not the question is. What to test functionality or completeness of the data or correctness of the data or accuracy.

So, these are the question that is to be identified. How you are going to test it, another question, where you are going to evaluate it in the lab, in the field. Then another question is that decide who should be the logical and user acceptance testing but that is who is going to do it. See you can involve number of stakeholders in the process.

User acceptance you can even include certain users to see and get their feedback and you can also use other stakeholders like suppliers and vendors. You can also use can use various functional heads in the process. For a user are concerned that is one state set of stakeholders on the other side you can also include experts in the process.

Because in that way they can able to see that how well the tacit knowledge which they have with them as been codified right, so, they would be able to visualize see the knowledge that they have in their mind in explicit form and they can validate it, and then the knowledge developer's knowledge developers, experts and various stakeholders.

These are the people who should go for logical and user acceptance testing right. The next point is you have to identify set of criteria in advance. So, what could be the criteria, as I already talked about it? The criteria may be related to either the knowledge content that is created or its functionality ok.

When I am talking about the verification of the knowledge it includes certain aspects you make sure that there is no duplication there is no errors first, second, third it is complete in itself. It is correct and accurate and it is the information that is provided is valid in nature so these are the criteria that is related to verification process so that you can see that the knowledge that is kept over there is complete, correct, accurate and valid.

And there is no duplication which is not outdated or redundant ok that is one way to look at it and the second set of evaluation criteria that you can identify is that weather it is working well it means that the end users are able to find it useful for that their work or not. These are the two set of criteria that could be taken up at the testing phase.

Then you at the same time you also go for documentation and get feedback in recorded form for all the stakeholders whether it is knowledge developers, whether it is exports, whether it is end users or it is the people who are maintaining the system ok. So, from all of them you get the feedback because this feedback will help you to decide whether the system is working well or not.

Then you also need to see that the developer, the knowledge developer, the experts, and the user they are well trained to make use of the system they understand what is there ok. And then you go for some kind of triangulation or meeting of expert's, knowledge developers or users to ensure that knowledge is not only verified but it is fully functional.

So, that people come to know what kind of knowledge is available whether it is valid or not that can be actually taken up by the experts. Knowledge developers will ensure that they have been

able to codify knowledge properly and the user would be in a position say yes this is the kind of knowledge that I was looking forward to for use.

And then you are going to identify the type 1 and type 2 errors and you need to minimize this so that there is no error in the process. So, I was talking about type 1 error is when you accept the hypothesis though it is correct sorry whether it is because but it is false. But in second case you accept or you reject hypothesis but it is correct so both the kind of things is avoided ok.

You think that this knowledge is good ultimately it turns out to be bad. In second case you think that particular knowledge which is not there that is rejected it is not part of the system but that would have been much better to include it. So, this kind of errors should be avoided at the testing phase so that you can include or exclude certain things, so, that it can be used as a used exclusion or inclusion as criteria, so, for us knowledge base is concerned.

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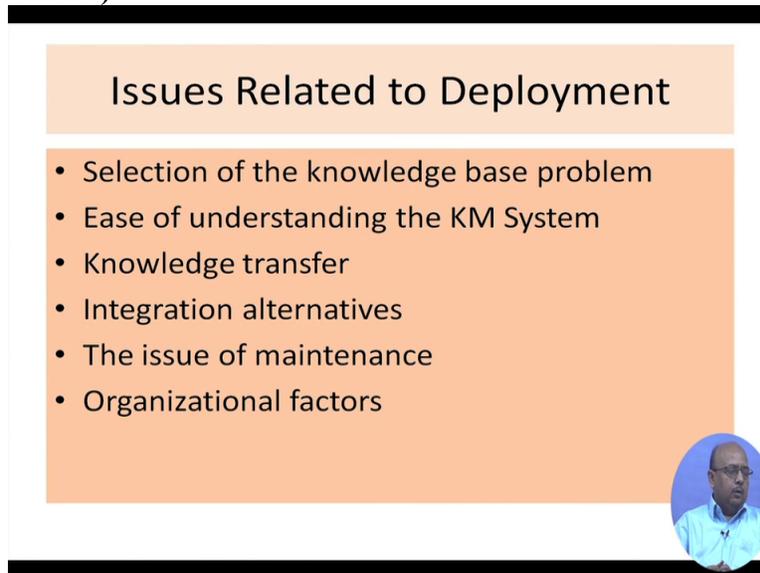
Now after testing we move to the next the deployment part ok and that is where you have to see that selection of the knowledge based problem ok. So, you have to identify when it comes to deployment. Who are the users and for what they are going to make use of this. What kind of problems can be taken up and solved using the knowledge base that is it is being created by the knowledge developers and the experts ok.

And that is part of the system, knowledge management system ok. Because unless you are able to identify ok these are the problems where this knowledge management system is going to be

help you, it is not possible for you to go further. Because you need to identify and pinpoint those areas where the knowledge management system can help people to solve their problems.

Now the next is easy of understanding knowledge management system ok. What I mean to say here is that when you are going to develop knowledge management system though it is a technical system, which is technically enable system but you need to see that knowledge management system includes what, knowledge and storage that is the repository. Then you have a system for it retrieval and use.

So ensure that the users of the knowledge management system understand where the knowledge is. How they are going to retrieve it and how they are going to make use of this and that is what basically easy of understanding and knowledge management system is. And then how they are going to transfer knowledge is very, very important.

So, whether people readily have this skill to apply the knowledge particular context or not because knowledge does not lead to action ok, knowledge leads to action only when you know how to apply the knowledge in a particular context. So, say for example you have learnt about programming you are very good in C++.

C ++ is used to write codes for various programs in different context in the organisation right. Now learning C++, is not good enough unless you are able to apply that to write a code or a program for a particular client in a context. So, that is where your knowledge needs to be transferred ok for that you need to have a skill, need certain skills to apply that knowledge.

It means that how to do a job using the existing knowledge which is available with you and that is where the KM system can help you. KM system can help you to find out such programs ok which is written and then you can make use of it to see that how people have applied or what processes you have been followed by the people in order to transfer knowledge at the workplace ok.

Then what are the e integration alternatives the different set of Information and knowledge which is available can be integrated together because if you are getting knowledge from the different sources then how you are going to integrate which part of the knowledge is going to be useful so you must be capable enough to integrate the knowledge that is coming out from various resources.

And then another issue is maintenance how you are going to maintain the KM system because it is a technical system. So, you need personal to maintain system on a regular basis you need to ensure because it is IT enabled system, it is virus free, it is not hacked, the privacy is maintain confidentiality is maintained right the system is working smoothly there is no technical error.

So these are the issues related to maintenance of the KM system before we go for deployment. The next issue is related to organisational factor, organisational factor is how to use the knowledge management system. Does it find it cost effective is it going to support the knowledge management system ok? So, you have to ensure that leadership is very, very supportive ok.

And that is why you can find some organizations have created separate position or a separate department for knowledge management system is responsible for initiating the knowledge management system in the organisation. Who is responsible to ensure people share their knowledge with each other. Who is responsible to ensure that the knowledge is utilized for effective purposes in the organisation?

And then it is headed by the chief knowledge officer which is who is reporting to CEO of the organisation ok. So, when I am talking about organisational factor since the management is going to support, provide leadership and resources you need to ensure that they are going to provide all kind of support and resources to have a good knowledge management system.

And it is possible only when the management find that it is credible, it is useful and it is used by the people for productive purpose yes ok. These are the issues related to deployment.
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Selection of the Knowledge Base Problem

System success may be assured if:
- User has prior experience with computer applications
- User has been involved in the building of the KM system
- Payoff from the KM system is high and measurable
- KM system can be implemented without much difficulty
- Champion has been supporting the system all along

Now moving further, on these issues let us say that how we identify the knowledge based problem, so that is the first part. Selection of the knowledge based problem the first point that we have taken it up now. So, the system selection is now maybe assured if you have prior experience with computer applications because it is because it is computers enable system.

If you work on this kind of systems it could be easy for you ok. You have been involved in the building of the KM system you have been part of the system right. Payoff from the system is high and measurable ok. So, you need to develop certain matrix to measure and evaluate the knowledge management system effectiveness it is very, very important.

Because unless you find that ok the cost benefit exceeds cost you do not need to develop the knowledge management system ok. Make sure that the knowledge management system that you have developed is very good; it is giving good result ok. Organisation is able to save lot of money out of this system, it is efficient ok.

Then you can say that yes payoff from the KM system is very good and at the same time you are able to measure it in terms of certain matrixes. How much ROIC you can also say that what is the return on investment on KM? And then monetarily check that how much money you are able to save after you deployed the knowledge management system right.

And then there is less resistance from the people because when you are going to take away project on knowledge management and to deploy in the organisation you need to ensure that you

get people support because people may be apprehensive, that why he is asking about the processes that is to be codified and then it is going to put to use ok.

So you need to create a culture so that people do not resist to these kind of thing. Otherwise what will happen people will not come forward to share their knowledge and ultimately if you are not capture and codify tacit knowledge there is no use of having a KM system. So, you need to reduce level of resistance among the employees.

Not only when you develop it when you when it comes to user acceptance ok. So, that they are ready to make use of the knowledge management system and then you also create champions ok. So, many organisation or taken initiatives in the process that they have try to create knowledge champions.

This knowledge Champions or nothing else but who initiate the cause of commitment and cause and have commitment to develop a good knowledge management system. They convince people and communicate to the people and they basically fight for the cause of knowledge management ok. So these knowledge champions are basically the back bones of the system.

They could be part of the manage knowledge management team who are going to support the system at all stages whether it is knowledge capturing stage, codification stage, deployment stage ok and try to ensure that people are going to support this ok

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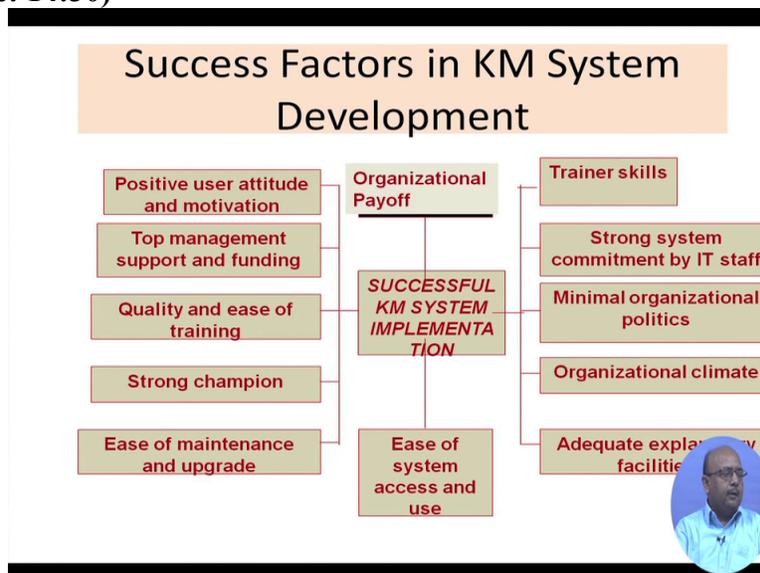
Now going to the next part if you look at it what are the success factors. In order to successfully implement KM system and see that these are the factors are important. Users, I mean end users

are mainly motivated to use make use of the system that they were positive attitude ok, yes we have the system and we do not need to look for knowledge which is available within the system of the organisation.

What we need to do is we have to look for it in the system and make use of it for productive purposes not for destructive purposes ok that is very, very important. So, you need to understand that people have very positive attitude about the knowledge management system that is developed ok and they are really motivated and encourage to use and apply that particular system.

Another important issue that we have talked about is support and funding from the top management ok. So, here the leadership of the top management as a very important role because they are going to provide leadership, resources and support to a good knowledge management system and they would be basically convince only when you are in a position to convince them that ok it is a good system and which is going to have good payoff right.

And then quality and easy of training, you need to train people your stakeholders when it comes to use of knowledge management system and another important issue is that you need to provide that quality content. If you are able to provide quality content you give them training and probably it would be good for the successful implementation of knowledge management system.

And then you also create strong champions I have already talked about it and maintenance and upgrade, you need to maintain and upgrade knowledge management system and this basically helps in implementing the good knowledge management system in the organisation that is one thing. What are the outcomes, good payoff for the organisation ok and easy system and access use for the organisation?

What are the outcomes you can see this trainer skills, strong system commitment by the IT staff because since it is IT enabled system you need to ensure that the IT system are the IT staff is fully committed to have it and there less politics there is no resistance people are ready to accept it. You have to develop a very supportive culture and climate in the organisation. You also As part of it you can also develop certain reward system ok and make sure that risk is minimized.

People perceive it as a good system and then you develop a good climate and then you have adequate explanatory facility. Suppose somebody ask certain questions about it so you are being

able to explain communicate about the benefit of the system. And if you are able to do it properly it would help people to understand it better and then they would be able to makes use of the system.

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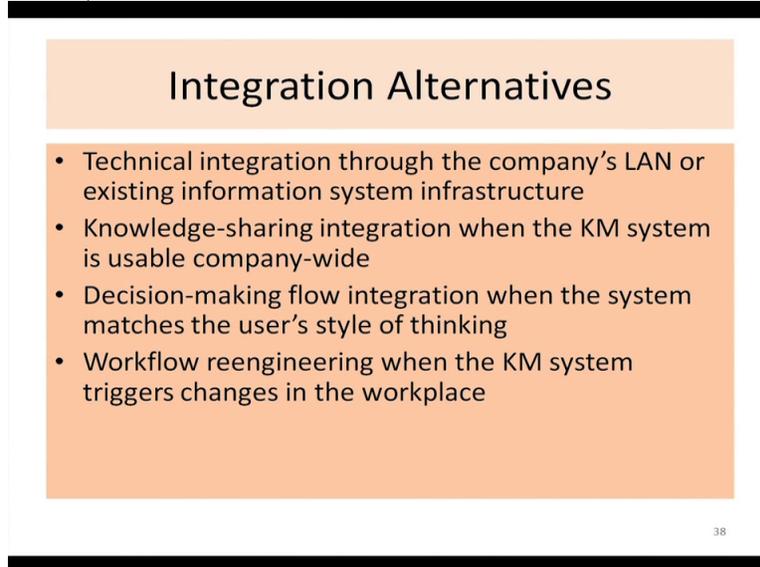
Third part integration alternatives how the things are going to be integrated ok see here I am when I am talking about integration it is basically the organizations local area network or you can use even wide area network also. For example in IT system we have a local area network through which all faculty members, staff and students are interacting.

And then it is integrated through information system infrastructure this is this kind of system basically helps you to get information and that helps you to knowledge sharing integration, when the KM system is usable in the company wide. Because you have developed a KM system for example you have a ERP system which has integrated all the stakeholders together any information that is relevant to person can be made available to that person.

And if he is a computer literate if he knows about the system you can easily access to it ok. And that helps you to take decisions. Decision making flow integration is also there because you can make use of the system to find out there trains and the patterns what is happens right say for example you look at the authentic record of various students and you can take certain actions and what need to be done and in order to prevent them right.

So, this kind of system can provide you information about the attendance of the students. It can also provide whether they paid the hostel fees or not. You can also see how well faculty is doing

in terms of research and project because this information is available to you, and based on that you make certain decisions for the benefit of the organisation ok and then workload engineering then the KM system riggers changes in the workplace.

And you can also see that when this new knowledge is created based on the existing knowledge with the help of the knowledge management system and people are trying to make use of that to create new things re engineering the things ok which basically brings changes at the workplace it means that it brings success successful for the organisation

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Coming to the third part that is organisational factors I have already talked about it in detail. So, in order to talk about the organisational factor yes as I said the top management support is of at most important. They also have to support the work of the champions the knowledge champions ok. They need to create very support you good climate, supportive climate which is risk free and there is no perception of threat.

Who are going to use it or who are going to deploy it ok, similarly you have to have a good reward system those were using knowledge management system are trying to be innovative and creative using this knowledge, so you are you going to reward them ok. And make sure that there is no politics ok. People are not going to create unnecessary fuss here and there and talk about something that is not good or favourable to the knowledge management system.

You need to create systems and sections balance to ensure that the politics does not play any role, because this system is above politics because everybody is going to use it. It is very objective

and transparent system which is going to help everyone. It is not meant for only few it is meant for everyone. And everyone is going to be get benefited so this needs to be communicated to be out of any political action by any set of people.

Whether it is middle management or junior people or when they unions, sometimes unions may have certain perceptions or objects or risk involved in this say that ok. If you employee this kind of system probably have to work more for automation. So, you need to convince them so this is not automation this is where you are going to get knowledge to be more productive and effective and you will be rewarded in a better way.

So, probably you may get better support from all the stakeholders so the unions or workers or the manager's ok and then you also need to see that as a manager that what is return on investment. Because KM system involves finances and resources you have to see that yes, it is going to provide good return and let me give an example.

Many companies which have implemented the knowledge management system, have been able to reap the benefits like Slum Burger, Slum Burger is a maser company and they are being able to involve a have a good knowledge management system and they have been able to save up to 1 billion dollar every year ok. So, in that way you can say yes there is a good return on investment on a KM system in the organisation.

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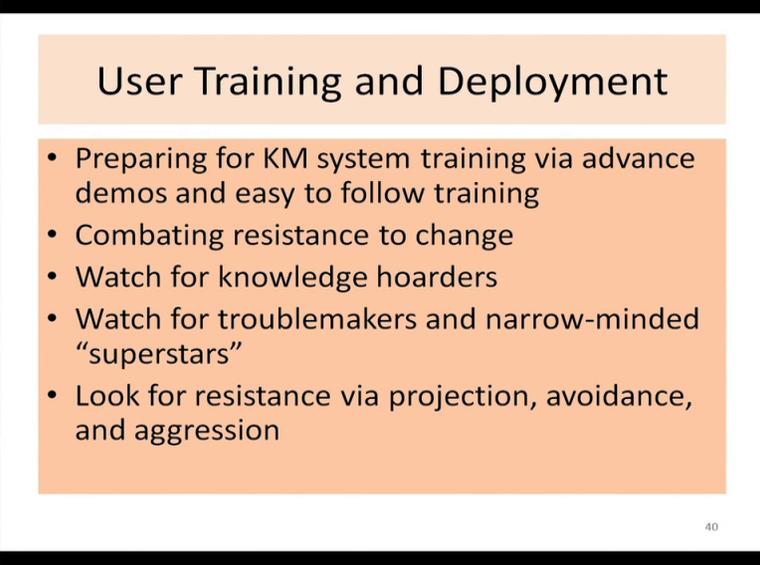
Now another important factor is user training and development. Yes you are to prepare a KM system training via advance demos and easy to follow training. You so you need to prepare

people those were going to make use of it right. And you also ensure that they are communicating well about the benefits. So, there is less resistance and watch for knowledge hoarders.

Make sure that nobody in the organisation is going to withhold the information because it is what you call identity thesis of knowledge sharing ok. On the one side you have people who are going to share knowledge other side you are going to hold the knowledge. So, make sure that you have a system with which is does not allow knowledge holding at any particular level right.

And then you also watch for troublemakers and narrow minded superstars. Some people ok who always criticize they are known as trouble seekers. So, you need to convince them ok by whatever means and ensure that these types of people are not going to be critical to this kind of system ok. So, people are ready to understand and understand the benefit of the system probably these kind of trouble makers will not be able to have a say in the process right.

So look for a system resistance, projection avoidance and aggression make sure that people are not going to have any kind of these behaviours like they are not going to avoid, they are not going to use it or they become very aggressive or irritative or you are frustrated when you ask them for use. So, they will create a hundred kinds of trouble or problems in the system this problem of that problem.

So what you try to do, try to get feedback from all the stakeholders and ensure that it is user acceptable ok and if it is user acceptable probably would be able to reduce the level of resistance from the employees.
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Post-implementation Review

- Watch for quality of decision making
- Reassess attitude of end users
- Review cost of knowledge processing
- Revisit change in accuracy and timeliness of decision making

Then the post implementation review that is the last part of the system and in the post implementation what happens you have to say that yes, how the system is being used. Once you are deployed the system you are to make sure that it is functional right. So, based on this knowledge management system whether people are using it whether the quality of decision have been improved or not.

For example if you have a recruitment system in organisation. Earlier you are not taking the help of the knowledge management system now you have a knowledge management system and a knowledge map; you have a guide map to knowledge to create a knowledge map for recruitment process. Now you have a recruitment process, look at the recruitment process which has been adopted.

And you also have outcome of the recruitment process use these processes in you are going to for further decisions for recruitment. And whether the quality of recruitment that we have made that is better than earlier recruitment process or not, if it is improved it means the quality of retention is better. Then more people have been; good people have been recruited and they are not going to leave it means that your quality of decision is better ok.

Then you also assist the attitude of the end users. So since you are going for a dynamic change in the knowledge management system on a regular basis keep up upgrading it make sure that the end users are communicated about it and they continue to have every favourable attitude because it is going to benefit them ok. Also review the cost of knowledge processing because every time you are going to capture the knowledge and codified it, it involves a cost.

So, you ensure that the cost is not going to precede the benefit and make sure that cost is minimum. Because once you are deployed the system when you go for additional input or putting additional say content in the knowledge system problem probably the cost would be less ok and then revisit change in accuracy and timeless of decision making.

Make sure that yes the knowledge content is accurate and any decision that is taken based on it. Timely means and whenever it is required is going to help the manager to take a decision because if it is not going to be timely probably the knowledge has no use for the decision makers.

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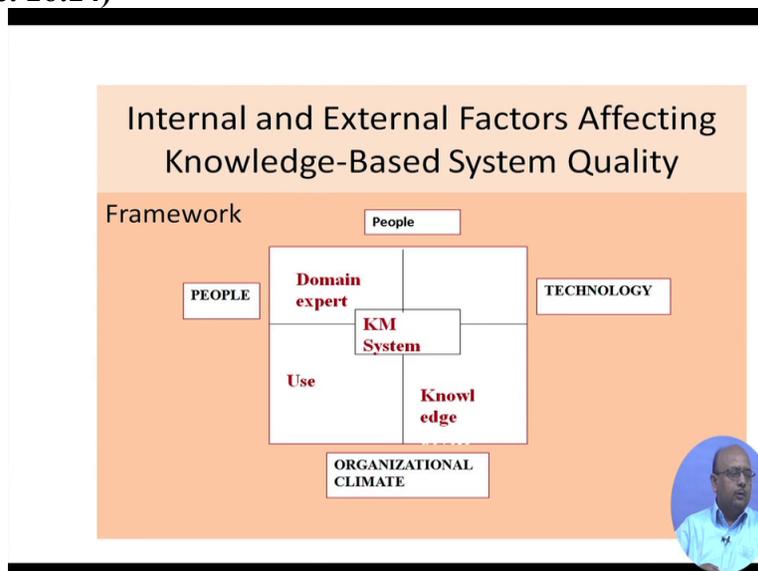
Look at the factor which is going to decide internal and external factors. This is a framework affecting knowledge-based system quality. Now if you look at this the factors which are going to affect surrounding include what people, technology and organisation right. So, here you have domain experts, here you have users and your knowledge, so, this is the technology right.

Now if you look at this these are what are the internal factors, these are the internal external factors and these are the internal factors external factors ok. So, the system of the knowledge management knowledge based system quality is going to be affected by why the domain experts, use and the knowledge. And you also have knowledge developers here probably I forget it t to write.

So, the knowledge developers, domain experts, user and the knowledge because it is moving from here, knowledge which is domain experts is going to provide the knowledge to the

developer related knowledge it is going to use by the end users. And these are the factors what kind of people you have, what kind of climate is there in the organisation and what kind of technology.

Or the IT system that you have your going to use infrastructure IT infrastructure maintaining, storage and retrieval of the IT system, so, this is very, very important this all the internal and external factors which is going to affect knowledge based system quality ok, thank you.