Electronics Equipment Integration and Prototype Building

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Lecture - 12
Prototyping of user interfaces for concepts

Hello let me do a little bit of recapitulation, because there is a little break and I will be inserting a video which we took in the workshop. It will be also a follow up on the small snaps that were taken there; so, that you will know a little about why I am insisting that we go through all these things. One of the important the reason why this is being done is all prototypes are made using one or two of the simpler way. Most of the things we end up with trying to do things in a small workshop or in your case you may be giving it to fabricator outside.

And, generally most electronic equipment end up as been some parallelepiped or parallelogram what do you call prismatic shape which is typically 6 phases that is I mean you know what I am talking about. And, extremely rare case we can also have built with only 4 phases that is a you know that triangular this thing. So, ratio being that thing is face. So, there enough faces and we can go on like that on this topic now.

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Let me get back to hope you remember this; this is nothing it could have been any simple what you call lab equipment, but a little bit of interest has been generated by rearranging the components. First of all you see here this and this mass has been broken by having something which you know sort of looks at us, but the movement it comes very much down; there is a little issue. These are all designed things which I will not as such talk about.

But here what I will notice is once again this has been broken here and you see here you have the main calibrating or setting up things are given here in the middle. Then you have something which you know the signal is fed here is signal is out and then we have a display here. This has been made with a very traditional that old microprocessor 1885 kit based thing where. In fact, there used to be a big rectangular panel typically height is around 130 mm and the width is the standard 19 inch that is some 426 and so on.

But, typically you can take it as a 400 mm by 100 mm or 120m m rectangular represent. And, then for convenience usually somewhere here in this right side the case where I will call it now stuck here and then there used to be a display and then few bit of some I will say random inputs and outputs. You will be surprised the same thing has been taken and relayed out in this form. And, this is here now I keep again coming back to my old thing saying things are a little different, things are about the same also.

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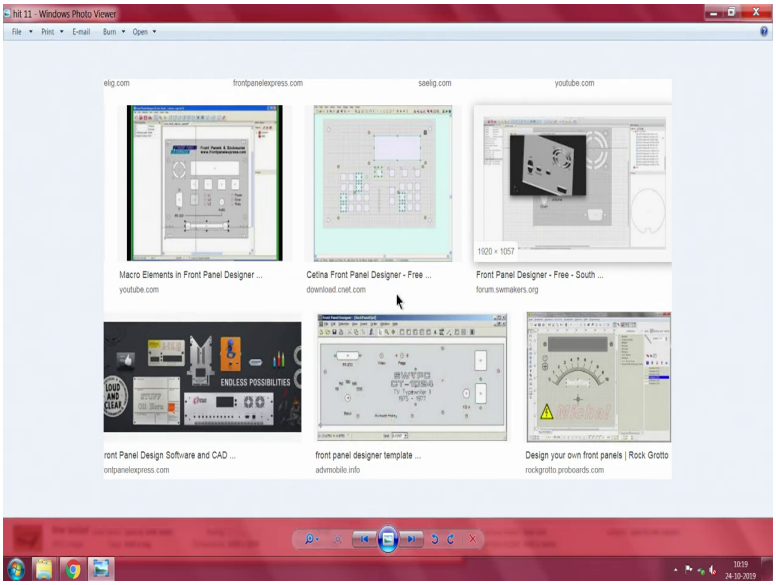

So, if you go to the, if you check on the web, there enough free designer what you call panels are there. You can design a front panel using you can download one of these front panel designer this thing. If a little closely if you are check or if you have the actually access to a thing somewhere, you see there is something called the cetina, I do not know we will call it certinar or cetinar or anything like this. Eventually the background if you see is still continues

to be a millimeter graph and these are the keys and things which I was telling you there are nice. There is a keypad like thing which is an one of the sides.

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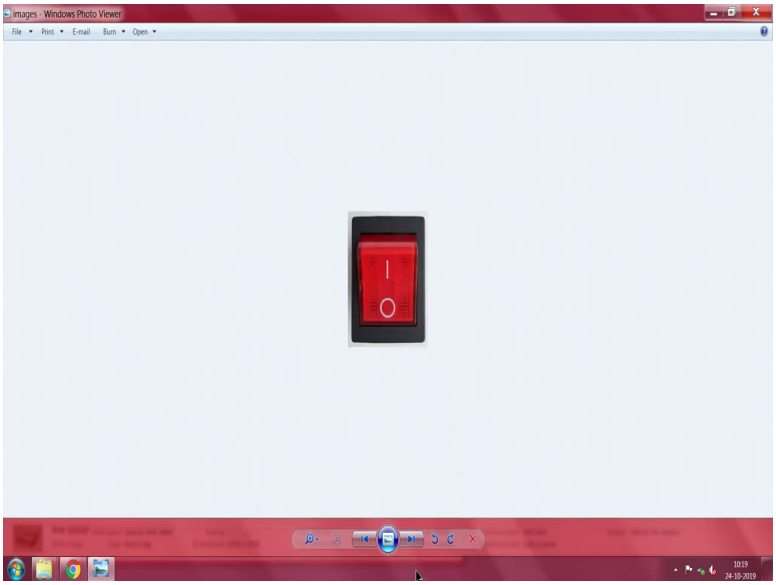

So, from here we have progressed to the other one and once again insisting on this thing is elements like this are available for you to be freely used, downloaded some people you know insist that we tell them what it is. But, in the end it is useful for both the person who has posted it there and users like us. Because once you have frozen on these components chances are you will buy it and once you buy one it is there, it is in everybody's memory including the company and including the academics you have done.

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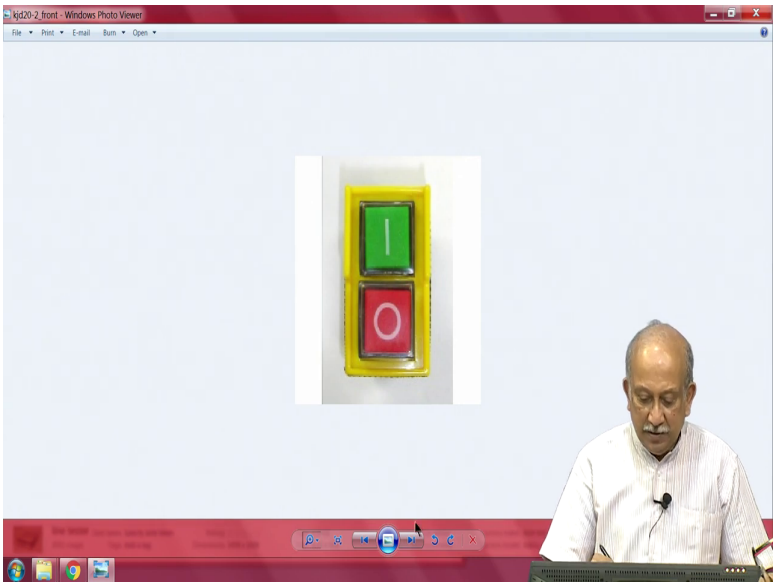

Things like this have probably evolved that way a started with something simple from machine tools and they become standard as trend. They are interchangeable from several suppliers, they are almost generic. So, you can pick all these elements and then organize them on a front panel and eventually you can drastically improve the panels what you have here.

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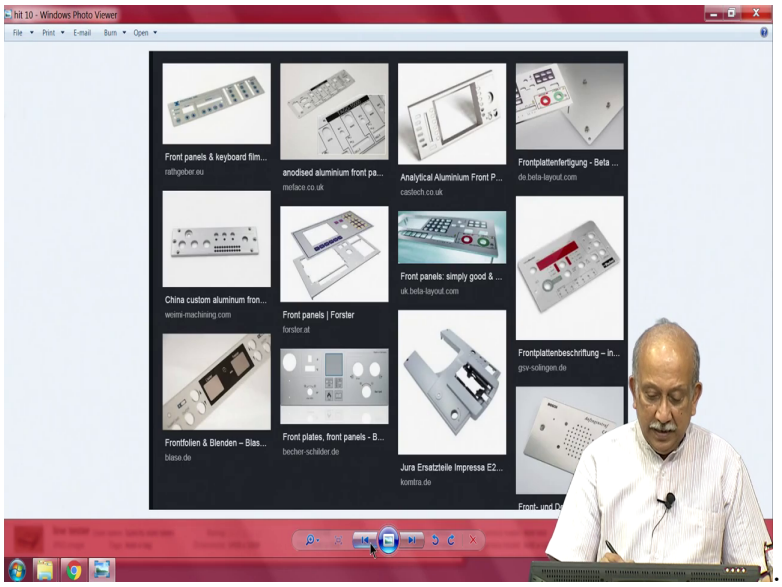

And as I said there are softwares and there are any number of these things which you want to do here you have seen this.

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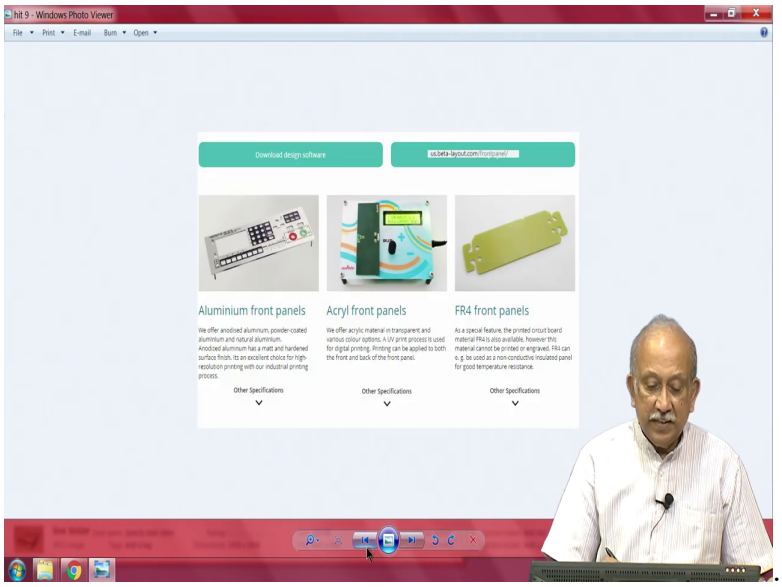

Really very very large number and there are people who fabricate this things for you on demand, interesting is it not and eventually the starting point is again a simple 2D illustrated sketch. The only problem with 2D illustration is that, it is not as flexible as a regular vector based package. The advantage of vector based is you can move it everywhere; you can export it, import it and do whatever you want and you see is something equally interesting is done here. There are acrylic front panels, read this.

Acrylic front panels are transparent and various colour options. Process can be used for printing both the front and back of the front panel. So, where will I use front and back depending on the type of use it as and depending on is there a chances some parallel x or a equip I mean things been mounted and so on. So, we have here the there are people after these

offer this services, say at this point you say that just a simple matrix sort of keyboard. Typically 3 by 4, 12 that comes to 0 to 9 plus a to f. So, that will come to usual 16 elements.

This used to be the conventional way. Now, there is no necessity for you to restrict to that you make a reasonable design and very very interesting here. FR4 is a printed wiring board material. So, we have something which can be used directly as a front panel actually the small other thing saying it may not be directly used as a front panel, but it can be a sheet that can be put behind the front panel.

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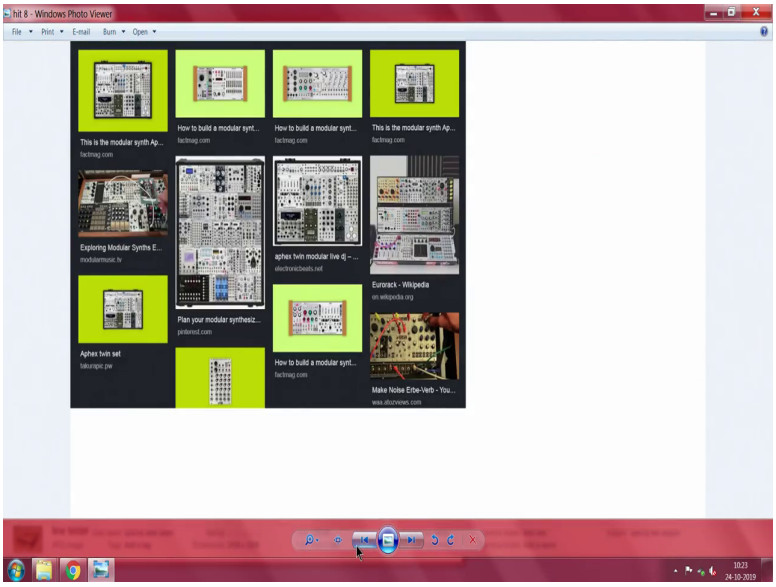

So, just to hold your interest see here, they are getting interesting, extremely interesting. So, things like this probably these small things where they started small and finally, when they got integrated we have beautiful racks full of these equipment. It is not a gag bus this is real, this is

real to the extent that a just a little while back I talked to you about the 19 inch or the rack mounted thing.

So, if you go to wiki and check for what is called the euro style rack this is a multiple of a u one u is one and half and quarter inch which will come to very odd figure of some 44.45 millimeters. These are all pictures in consultation, I mean in what you call step repetition and you can always make a library of this things and keep. Whenever you want, you can cut and paste them here.

So, in this case, it looks like a 3 u or may be 3 u plus 3 u there and then something here. So, very very interesting things here, it is just a repetition what I have shown you already are just a repetition.

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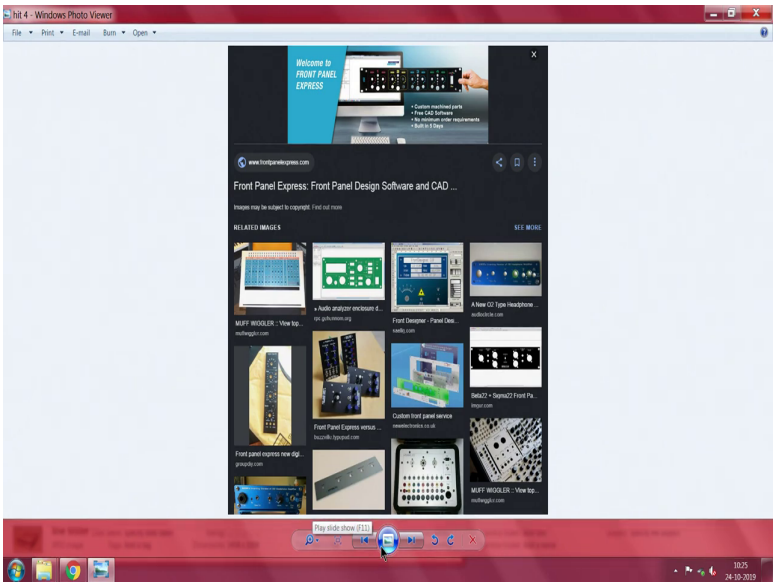

The starting point for all this things is invariably what appears on the front panel.

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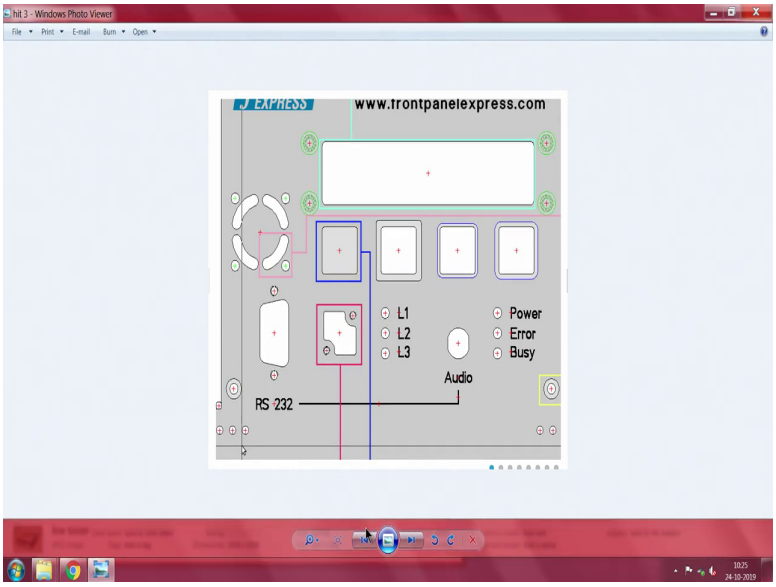

This is an enlargement from the one earlier, but you see the point I am trying to make is you should decide on what you want where based on usability plus there were you can arrange the components inside only you are the expert in it. It is possible some of them may not be needed at all for you no point in populating the whole thing as you like.

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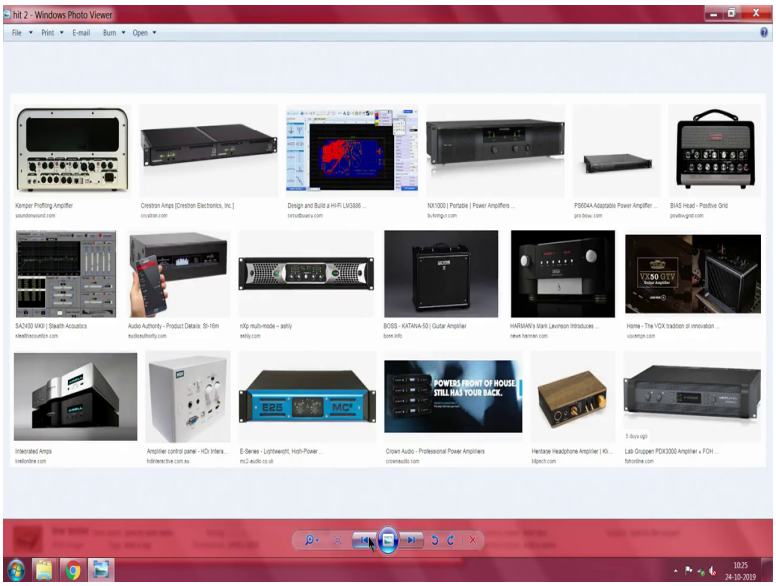

So, before freezing everything coming back to the old chicken or egg approach, both are real. You must know what is the circuit you want and then you must know what the circuit you want is by finding out what is at the potential customer needs not what is the earlier one they need. Potentially what the new customer needs if you can somehow use your intuition and come back and make a muddle, you have already won the race.

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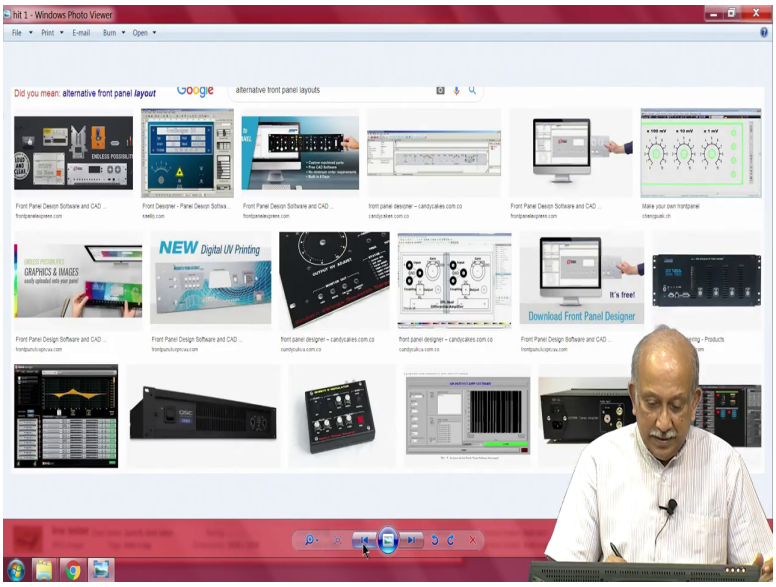

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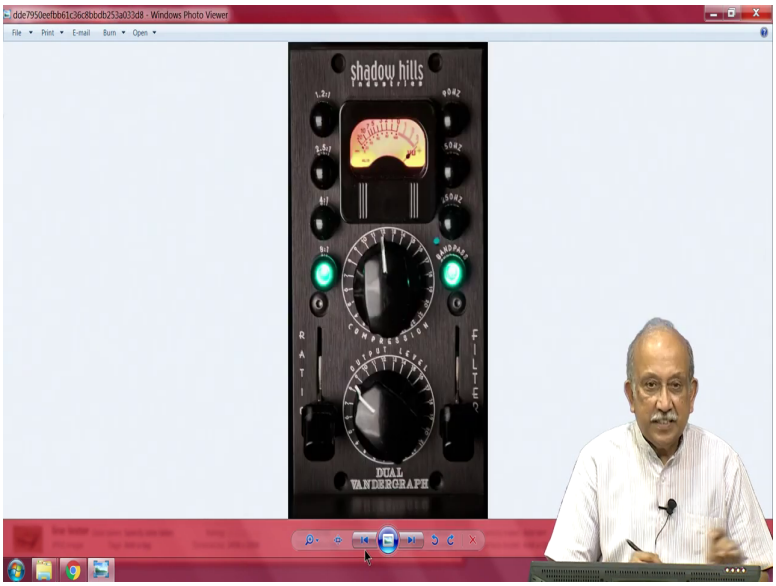

So, I will just quickly scroll through this now. I am not sure it is an intentionally retro or it is a old thing.

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So, all your the best music and all was probably made using these [laugher] and why am I showing you it is, this is not done in any 3D modeling or using CNC machines or laser cutting or anything. Everything was laid out on graph paper, masters were made screen, printing was done or in this case probably it is partially photo anodizing and screen printing and you have fantastic unbelievably complicated equipment.

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Elemental thing is still they old components which are available everywhere.

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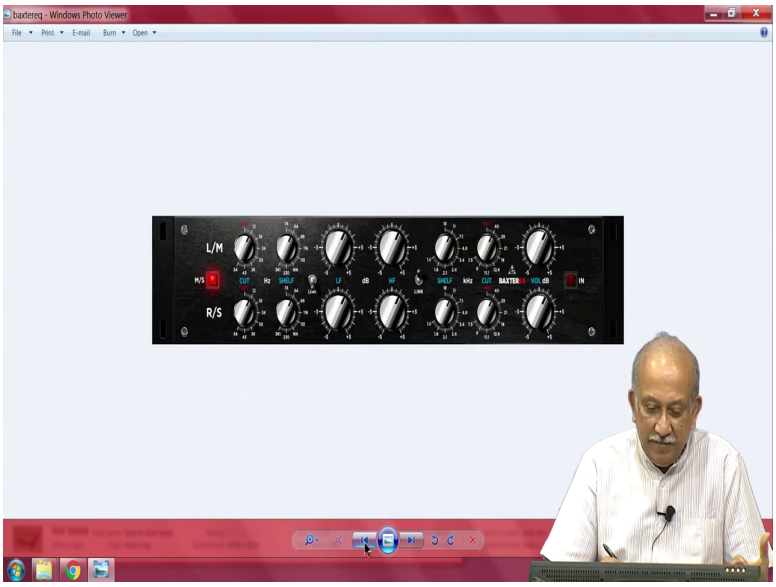

I am sure some of you who have audio or grownup with audio or you have seen fathers or in grandfathers having such equipment. This is typically something which can be mounted in a just stacked one over the other or if you add this flange, it will become a 19 inch rack mountable. The width is 19 inch and the height in this case is probably 88.1 and the width is 426.

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Now, we come to very very curious and I am sure you know what it is. This is; obviously, not a printed front panel. This one is a something made on a mobile yeah this is a what you call a, graphical interface made for HTC. So, you see here there is advantages, disadvantages. Advantage is anything you want you can make if I know the size; if I know the size anything I want anything you want you can make.

Disadvantage; however, is display and continuous change, continuous change of aspect ratio, resolution and the position of the front element. Some of them show full thing is occupied, some of them will have a black bar here. Some of them will have the so called tear drop front camera and there are sort of you know the there is a you know run away a cameras these days.

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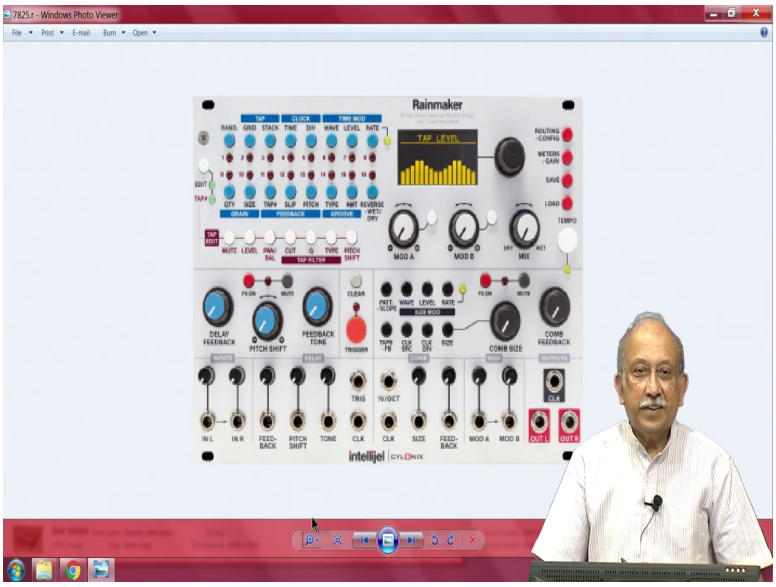

Honored to see this things and its very very easy for you to take a print of it, modify it. You can probably move this whole thing somewhere else and rejuggle things and so on.

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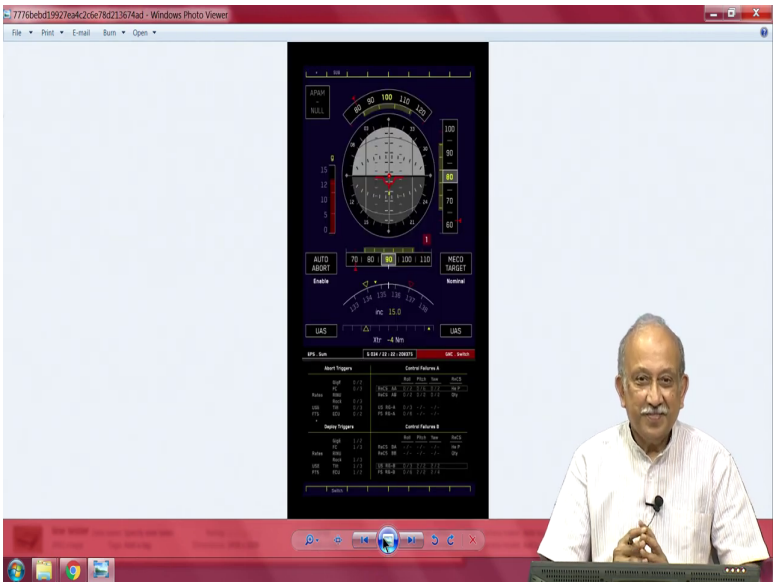

An artificial horizon I do not know, it is part of a video game or it just something that is just created. You can now discuss these things with your colleagues.

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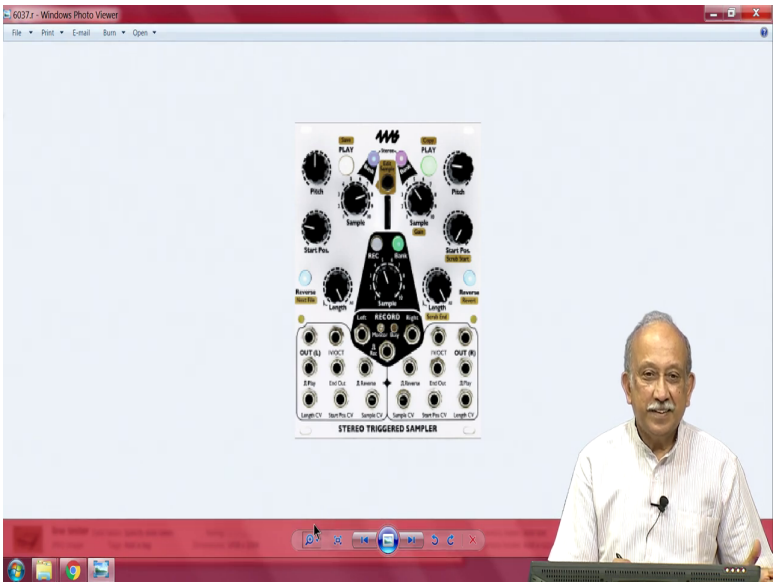

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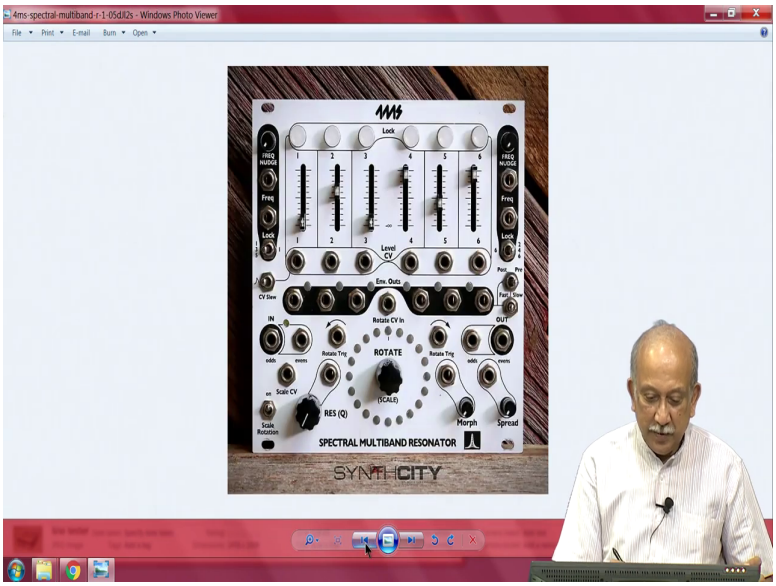

Very I would not know exactly what it is; I will just picked it off from the net.

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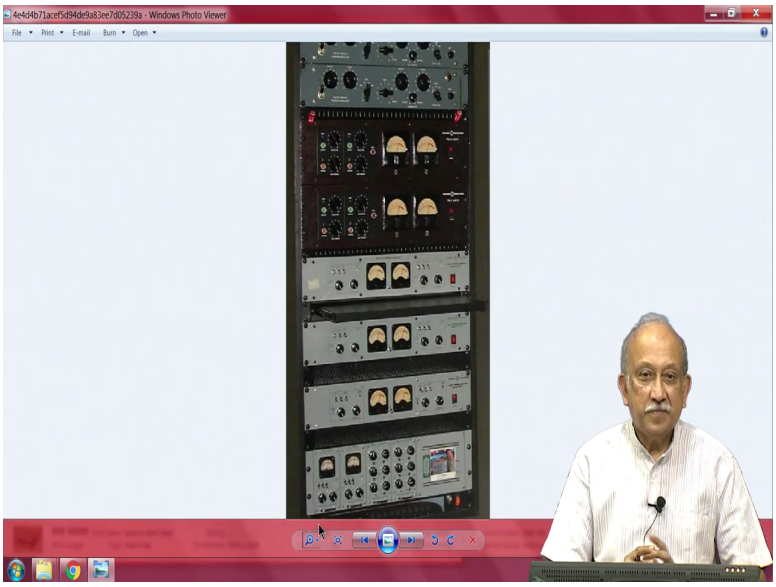

This is not a very long time back and still perfectly serviceable and they are used in the studios all over the world. And, suddenly there is a what you call resurgence of old not retro is not style they found out that the new way of dealing with the electronics is not helping much. That is the reason still good old simple tube amplifiers are still valid.

The beauty is you can probably understand all these elements. You can use this retro style or you can now do a modern things saying do you need all these fixed things and so on.

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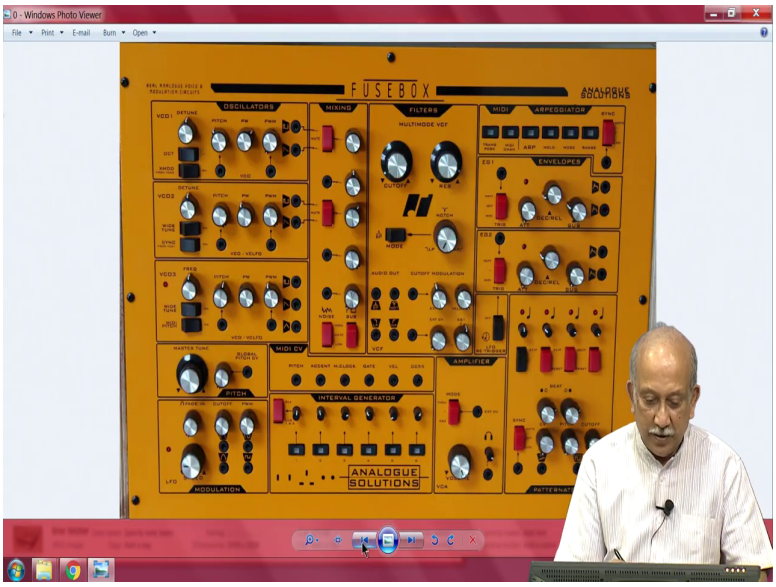

So, you have beautiful, beautiful, beautiful things.

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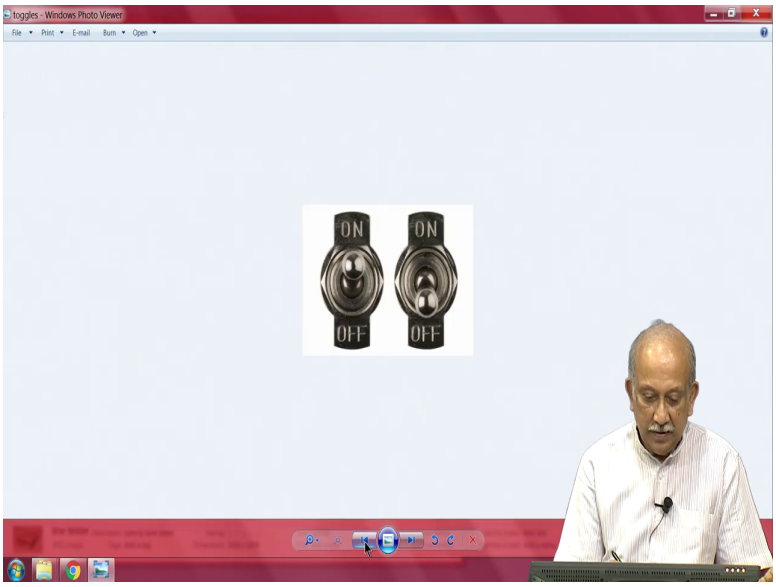

Very good.

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Getting better.

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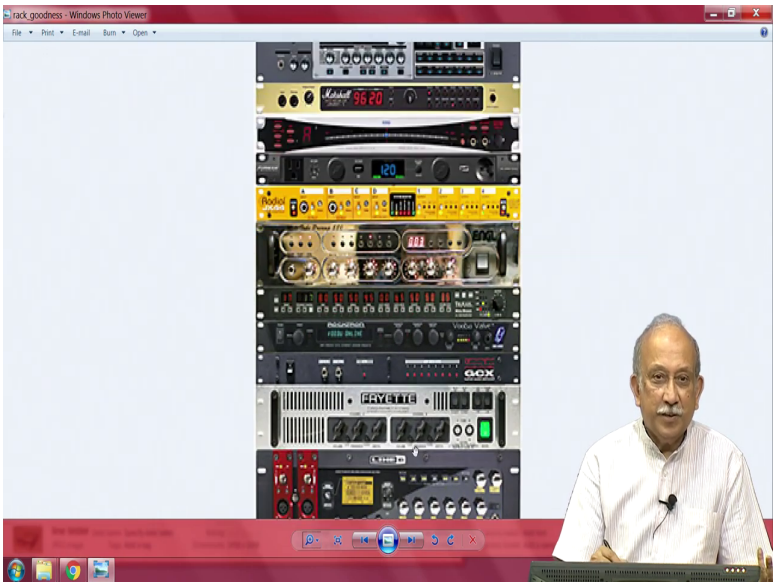

I do not know if it is for real, but to me now it looks quite enjoyable and even these names; I am sure you know what this names are, they are big and that the people who have given you music.

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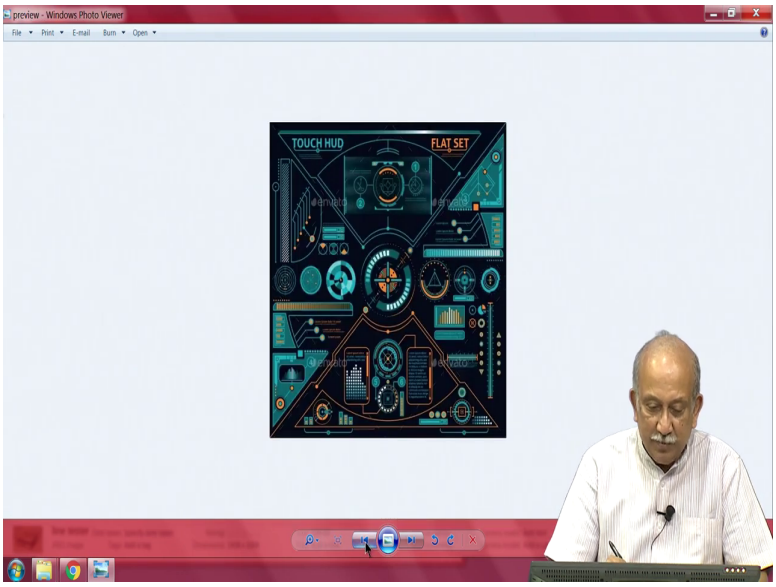

You have got the music from them.

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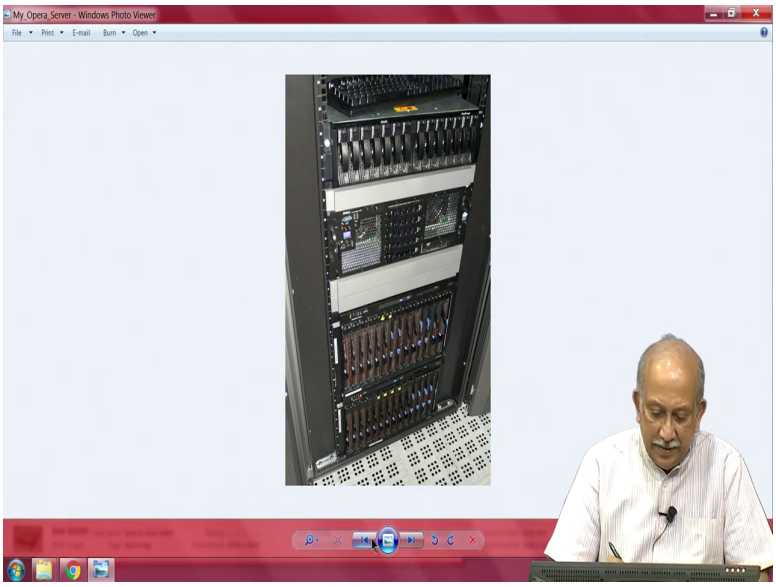

This is probably a later day since sizer.

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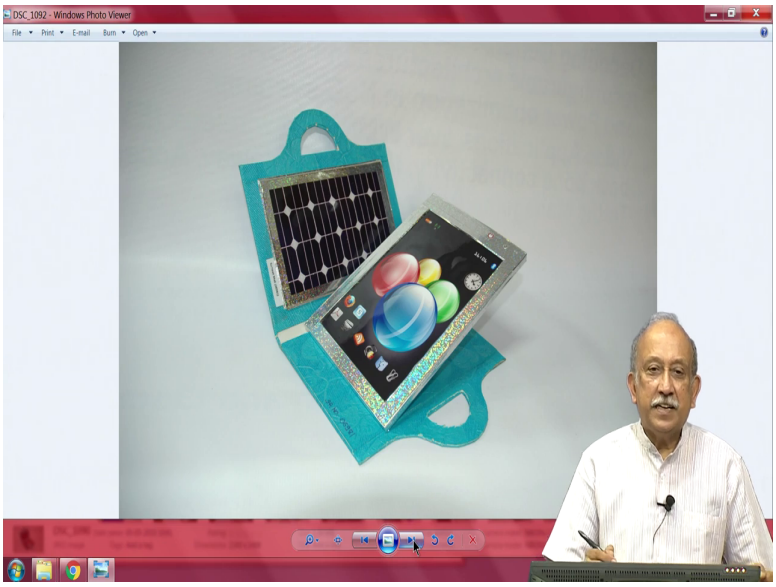

This is 10 years ago, I when I ran this class and given to my students at over here at the Indian Institute of Science, they made all this. Thing is minor constraints are given saying try to use things which are possible in the near future, you understand know. Immediate near future many things are available need not invent anything and that was the time when one laptop per child thing was going on in a big way.

Saying now do anything, but this was actually a one of the very first exercises saying make a simple mock up on your concept of how a future small laptop can be, no further constraints are given. So, I think it is obvious here. One of the registrants came out with what is an obvious thing. Looks a little different is not it? We expect probably a keyboard here and then we expected display there.

Little upside down, you have a display here and you have something else there I am sure you would have appreciated what it is. This as per him or her is a laptop PC which you keep open and leave it outside and you can have the display here and then probably when small corner of the display I can be used for as a input device meaning, this is a directly touch device.

So, all you have to do is may be keep it flat or even. In fact, this can be reverse so, that the ambient light will be used and then this laptop will keep running. This will not charge, it is a charged laptop; it will not lose charge as fast as it would be otherwise. So, very large number of these concepts were made. You can probably remove the pad just then they you know they original I pad and things were being made and another thing is saying this is a charger for the I pad. You can use the I pad as you like closed.

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This is very very cute. It is just a whole thing is a just a graphic over lay; it is not a real life. What you call device what they have done is they have taken this is probably a styrofoam and painted by hand by careful paints probably water colors. And, these are probably something which you know they have picked up and everything else you know is cut outs and does a beautiful somehow, they got this and put it there more.

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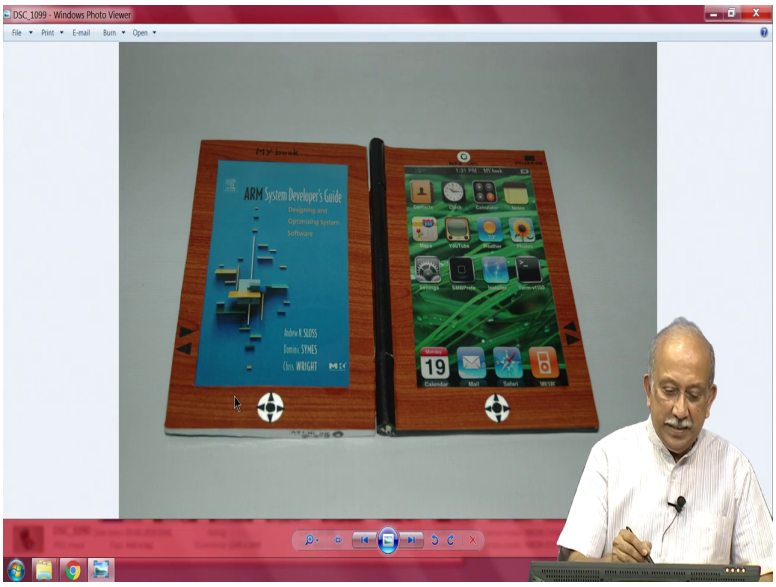

Saying who will ever read an online newspaper that was a little you know problem in the beginning, but now we have everything. I to I am surprised that you know I can open a mobile and read the news, it is not the same as the online newspaper, but my interest is knowing the news. And, now when I have sponsored news how would that the advertisements pop up and all that.

So, somebody had come with the saying eventually probably will be able to use it like that and you see here all these are simple over lays made by a simple illustrative program. So, these were all taken from somewhere and they have just probably that the student was very much interested in arm process and system design and so on. So, he took this page from a what you call trade literature and he stuck it there and then he added all these things. So, I am very much impressed by what all can be done.

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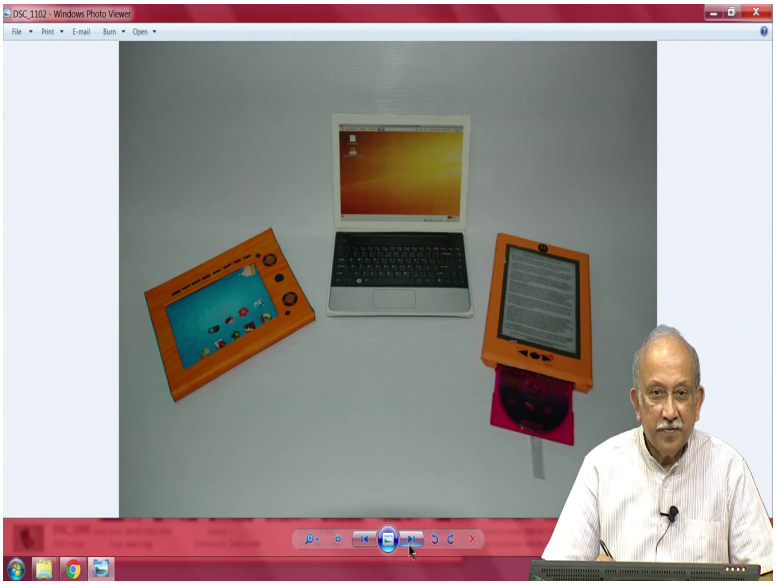

Very difficult to believe is actually real thing here what is this and what is this. Probably for size he has put one actual I do not know if it is an apple or something and then, he put this two things. So, that size wise we will know what is going on.

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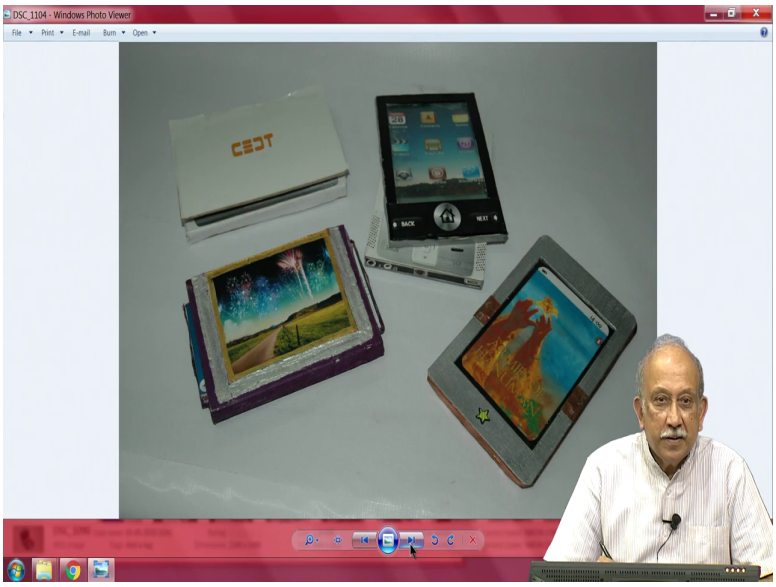

That was where the whole thing started.

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Why should somebody call it something iPad why not call it, what he has called?

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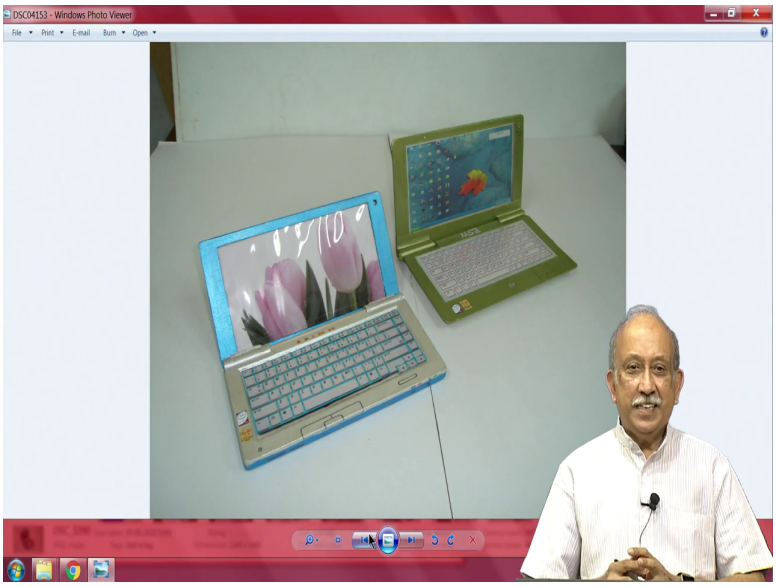

Do you see here? He was one of the persons from actually a product design. It is not a studio its actually from the what you call military engineering services. He has come out with a concept saying the future is going to be slightly different. You may or may not have keys anymore. This is an active capacity of touch surface by that time only resistive was available saying any keyboard you want, you can punch up the keyboard any language or anything.

So, this is a very conventional normal touch screen that is kept here. This vary and probably is instead you can have keys here because that will make it much, much, much cheaper compared to this seen here. The seen here you can see that there are what you call probably what is equivalent to mouse keys. This is a full touch pad. The critical thing comes here what looks like a very simple thing.

His concept was saying eventually everybody will be carrying one of these things and they may be wanting to show things directly on the screen and they may be sitting across the table, you would not want the other person to see. So, this is a very peculiarly his concept of a screen where translucent you can see from that side and you can see from this side also saying you can present what you want on the other side. If you want to share, you can echo it with mirror I do not know how it can be done.

So, when you close it probably it will look like this, I am not sure. Can you see here? In this side, this is on one side; this is probably on the other side. I am not very sure. His concept was saying it is a matter of time somebody or the other will work towards it. So, we will have a laptop which you hold it up and this is not a big laptop probably it is something equivalent to the now 10 inch anything, but the aspect ratio is different. It is already the 16 by 9 aspect ratio.

So, you keep it in front of you and you can punch up anything you want, the person other side can see what this man wants him to see which I thought now is very very clever why I am mentioning it not as a product idea or product concept saying the whole thing has been has been made. He has taken transparent sheet what is called the overhead projector transparencies and he printed it in his I think in our lab and mocked the whole thing. Only thing is the little unusual is probably the hinge, remaining everything is made at home. More and more and more of these things.

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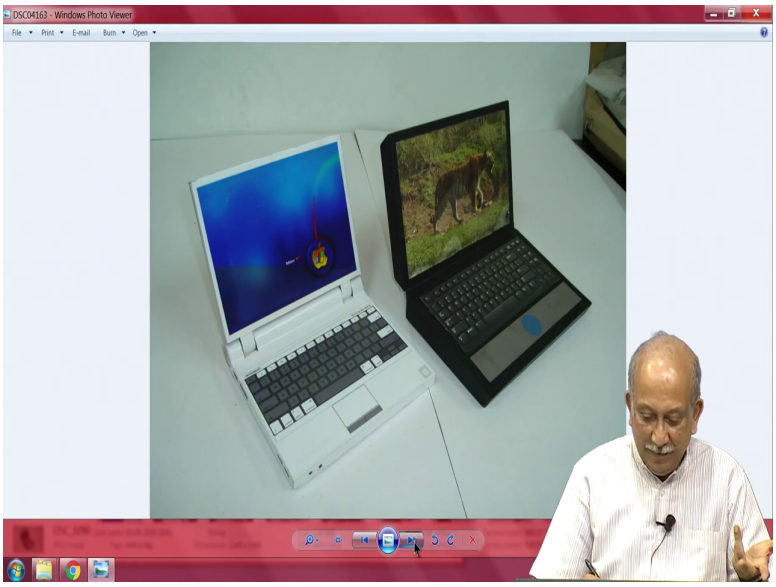

Ignore that name, he can claim saying my name is Sony that is a different thing and you see here anything you want is probably been mocked. Now, I come to a real problem or this real computer probably this one does look like a real computer and that is only kept for scale. It is not a real computer it is still a mock up only I do not know how they manage it because there are some people who are ready to you know do these things.

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So, a revolutionary new way of doing things; can we have a drive where it has basically naked frame a little I cover motor bikes and all that. There is something here which is directly either probably it comes from inside or after, it comes from inside you put your what you call any of your media and then probably there is a support and then it reads directly from there. And the whole thing is all these are all mock up graphics that I have been attached to some; I will call it a pizza box.

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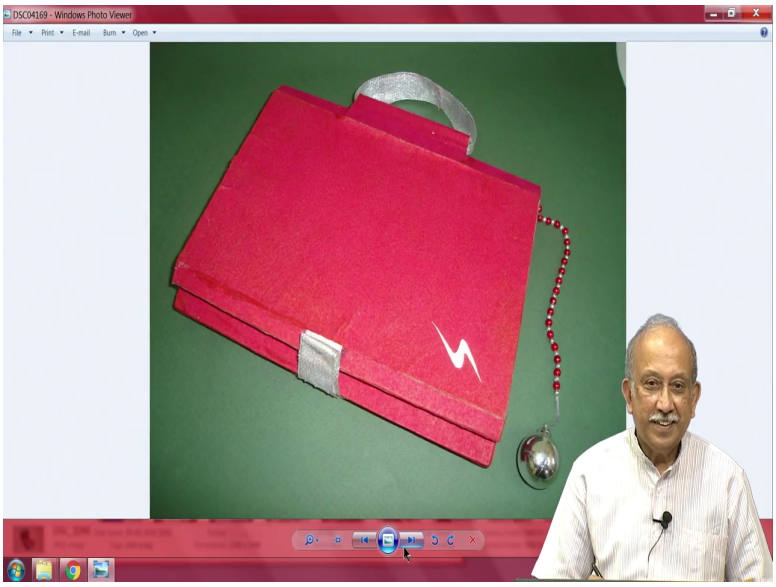

So, lot of pizza box is here. Now, you will appreciate now. I do not know what exactly the right thing is I thought let me stop it at this point ok. You see very very interesting extremely interesting things here.

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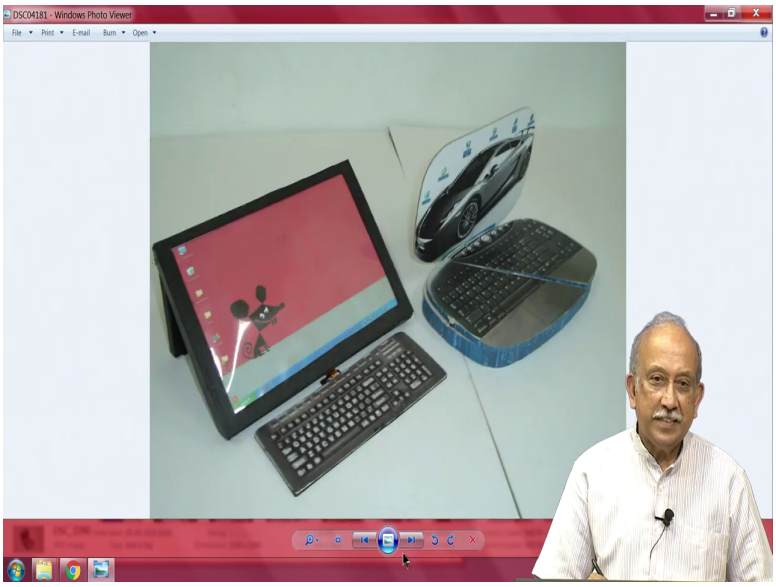
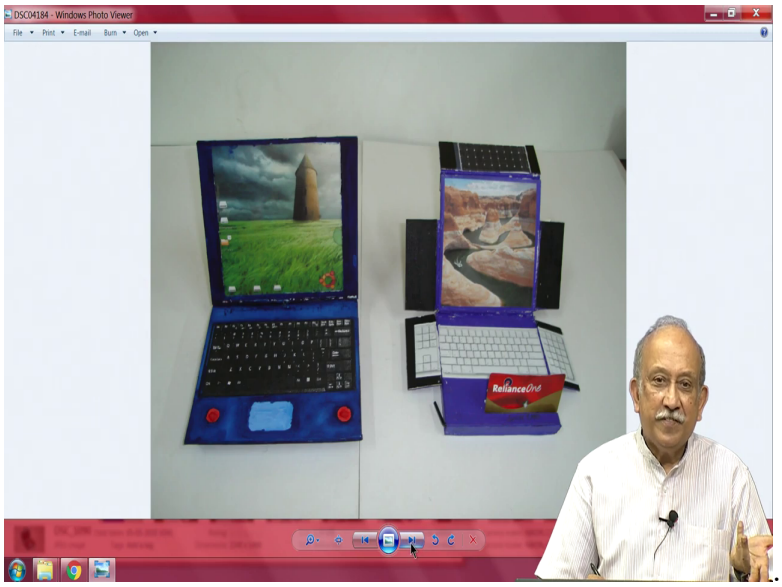


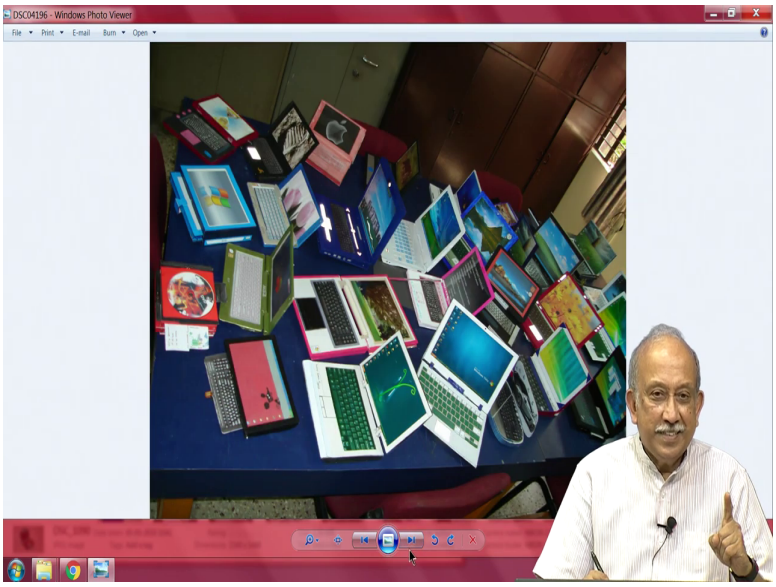
In this case, I am not very clear whether this is an actual keyboard or they have mocked a keyboard and then they have made beautiful looking things.

(Refer Slide Time: 29:01)



This is something of my it is obvious; it is not a regular keyboard, it is just a picture of a something either it is actually a picture of a keyboard or he has made his own variant of it that is one of the things. So, many other keyboards are there which are much better saying, but is it is not it about time that we learnt a lot more about the new keyboards that can come.

(Refer Slide Time: 29:37)



Again this exercise is not about concept generation, this exercise here is not about how to make a model; it is about saying without the help of downstream large amount of activities; it is possible for us to easily make these make these things without too much of you know relevance, what you called dependency another things. I will just skip these things.

Yeah, I think I will stop here Sir. After I locate the other things my basic half an hour is over, I will just stop here. I am not able to locate something which I have stored here ok.

Thank you.