加载完成: 0.65%静音字幕倍速超清5.17.mp400:00:0201:41:42播放视频超级会员高速播放通道 立即开通5.17.mp4视频AI看课件文稿 选集01:32:304.23.mp4未观看01:34:434.25.mp4未观看01:35:104.26.mp4未观看01:33:334.28.mp4未观看00:42:114.30上.mp4未观看00:44:274.30下.mp4未观看01:45:485.10.mp4未观看01:49:255.11.mp4观看至38%01:39:255.14.mp4未观看01:44:475.16.mp4未观看01:41:425.17.mp4正在播放01:43:005.23.mp4未观看01:41:035.24.mp4未观看01:44:595.28.mp4未观看01:36:275.30.mp4未观看01:37:285.31.mp4未观看01:42:095.7.mp4未观看01:36:175.9.mp4未观看01:31:546.11.mp4未观看01:26:256.13.mp4未观看01:34:576.14.mp4未观看01:36:466.4.mp4未观看01:35:516.6.mp4未观看01:29:346.7.mp4未观看好。哈哈哈。嗯。哈哈哈。是的是的。呵。うん。あっ。哎。为什么是c？查不出来是吧？put on top professional h put on top,okay?perhaps over ni KO phon I am excited.no,no,not much lunch,but on orange I have eaten an orange.ii hope you are not,you are not hungry.not his first big orange.no,it's I know that in China eat the meat is the largest better,but er I had no time.OK,I see it's very short time. yes,of course,but no problem,um,I have eaten in the last year so much,so I still have enough for the coming years,eh?my body is too big.啊哈哈哈所以you still keep energy。yes of course OK,there are twenty students in the classroom.yes,I see them and some of them are using the mobile phones I see.哈哈哈。no fine,OK ay.so that so with that嗯。爱笑。啊嗯。i do not share,I just have to.不洛克法则。36法则v法则bbt。咳咳。嗯。so we have stop last time here,I think.OK，嗯。yes啊，the。I would like to come to talk a little bit more about the socalled performance.我是个呃，你看不得你。and it of the enterprise sander,it is in principle. and this we have put here.it is in principle.um,it defines the ability of an enterprise to realize production programmes.so嗯。so in principle,what can they really produce?to consider our economical,ecological as well as demands of the market.and the production potential can be defined qualitatively and quantitatively through some factors. there is location.is product production of goods,the processes,the area building,the factory structure,the staff structure and organizational logistics.so these are the the keywords,and I would like to explain it with some examples. but first we translate here.嗯，好的，那我们呃，这个上节课也是呃，讲到了我们的这个企业，对吧？它是不是？呃，是不是一个啊？好的企业，或者说是公公司，它的这个目标是什么？对吧？然后呢？那我们这边呢？呃，也是呃呃，要考虑到那我如何才能够呃能够达到这些目标，或者说是我的呃作为。呃，衡量它的这个呃，是不是企业呃，它的这个呃，它的整个的表现是好还是不好？对吧？它的呃，那是有哪些的这个因素来？呃，进行衡量的，那我们这边呢？呃，首先呢，也是说了这个生产潜力呢，决定了公司的这个绩效，那首先企业的绩效呢，我们是用生产潜力来表呃来表示的啊，这个。啊，我们这边是叫performance那嗯，它是嗯，那我们怎么来看？它的这个呃，这个生产潜力呢呃，就包括了我们的整个的这个呃，经济性，生态性以及市场的需求对吧？economic economic ecological和这个demand of the market。也就是说你的呃，这个呃，通过你是不是这个有产生经济效应，然后呢，在你的这个整个的生态这一块对吧，我们上回也讲了好多，比如说你这个绿色的这一块。还有就是市场对你的这边的反馈啊啊，这三点那呃，具体来说呢，我们又有两个维度是吧，是从质和量的两个维度。呃以呃从以下的这几个呃。这几个下下列的，这个几个要点去来进行呃评估对吧？包括我们的这个选的地理位置，包括它的这个生产的产品，它的流程。它的这个占地以及它整本建筑本身对吧？还有呢，我们的。工厂的结构，然后呢，包括我员工的一个架构，还有我的整个的这个组织形式，还有我的物流嗯，通过这几个方面，那接下来呢，教授会具体的来给我们。嗯呃，举几个例子啊，我们来看一下。I would like you.stop the sharing.本村。此回去都在看门。so what I would like to explain is,how are the German um?an automotive of companies organizing the production,there are two principles,the first one we call pearl chain.嗯a dodo those bishop and na hass shiba anz on sva zines s。yeah，好的na good to be so clyde lyn ay，where's z in nix？你爱谁说不爱情。um,and the second one is a.呃，step。stepwise.stepwise.嗯呃，order。阿尔德瑞利斯。or assignment.二零一四。or at maybe assignment,we could call also call it assignment.the principal's this is mercedes or mercedes bench.this is small fox bargain.嗯sst yer on chel is horgan I tach on sme total order v。eras the de parent cater is thus on tar CIA is ti zog on a tage,shove the outs trucks for ig rabble.嗯，好的，那我们这个在呃呃，我们这个呃工厂的组织形式里面啊，有两种比较经典的呃生产的组织方式，对吧？呃，其中的一种呢？我们把它称为这个珍珠链模式。另外一种呢，我们把它称为这个呃，就是呃分布的呃，把这个合同呃分布释放合同的模式那呃，其中呢，第一个的这个珍珠链模式的代表型的企业。呢就是梅赛德斯奔驰，然后我们呃第二种呢，它的代表企业是大众。the normal procedure of producing cars is they define a sequence iii draw. now this sequence here is just some.a squares and say every square is a vehicle which has to be produced,so they fix at the beginning of a time. let's say of a day or a week.er,the sequence in which they want to produce the cars.um,and the.in my cities,they tried to em.make a sequence which I sum.considering eh,let's say eh,some restrictions of the factory.eh,let's say when we are heading out now,we have two,four,six,eight,ten,twelve,thirteen.forty let's put fifteen.so if they have in this fifteen,this fifteen is of course only a short sequence of the daily production.but if in this er,if they have to produce leverage,let's say every thor sixteen,i put sixteen.er,if they have to produce er every FALSE car is heavy,then they produce er of this. this car is heavy.this is heavy.this is how we end.this is heavy,heavy,i put age,so what does it mean? heavy,heavy means,this is a car.where a lot of work has to be done,it's because customer has ordered a lot of components and so every every car is for customer,customer one,customer two,customer three.customer for and so on and uh some customers have ordered a very expensive car.er,and maybe they have an additional heating,maybe they have electrical components,maybe they have special engines,maybe they have special functionalities of the seed.and so on,so that these cars,they tried to distribute these cars eh throughout the day. eh eh ase calibrated as possible.那我们先来看一下这个呃珍第一种啊，就是我们所谓的珍珠链的模式呃，那呃就是奔驰公司呢呃，它呃怎么来组织它的这个生产呢？首先我们来。呃举一个案例那嗯，好比说我的这个嗯，我现在有呃，一共梅赛德斯一共有16台车的订单对吧？然后呢？每一台车呢？是对应一个相应的。这个客户那我每隔四个客户呢，他这边就是有一个呃，所谓的这个heavy order就是说他的工作量会比较重，对吧？那这个工作量重，可能是哎，他这个客户有嗯，要加装一个暖气啊，或者说他要做一些别的顶配的啊，对吧他就是。呃，有一些特殊的这个。配置那呃，每隔四台车呢，就会出现呃呃，每每隔四个订单呢，就会出现这个一次这个happy order。呀so i put the names of the customer customer web to six in here。now then er,maybe they start with the heavy cars because they want to make sure that this is running smooth.then they have some restrictions,May be in a certain area they are only able to produce a.嗯。well,what a good idea could be that they always after erafterera heavy cart maybe here was also a previous one,a heavy.er so ed and then therefore they make a very low,low in a lower. they combine it with a car where low.a content has to be done,so it's a car where we do not have uh many pieces to put in.AA customer who has saved money and tries to keep AA symp rica.好的，那我们一般来说，如果说这个呃，一般呢，它就是做完一台呃，比较任务重的这个呃，我们叫he be cue以后呢，它会呃接的一台就是。可能它相对简单一点的，对吧？就是呃low cost的这个就或者说是配置比较低的低配的这种车，那这样子呢，就是工作量任务重的和这个。呃，轻的它可以搭配起来。and then they try also to er combine,maybe some cars where we have er er.幺二七二二点四二。嗯。as they are expensive if they have eventually some,some special requirements for.for testing about em.sealed e rab outer fur consumption,so I sayer cars with big engine big.ii make engine here engine,this is a big engine,so they always try to put iner their big engines.according to a certain logic.嗯，好的，那我们呢？嗯啊，那我这边呢？这个呃写意的这些地方呢？就是我装上的就是比较呃。呃，厉害的马达嗯。it these are the norm a cas.n呢，就是代表的就是一般的对吧，就是我们可以说是呃，这个嗯，白板配置的车啊，没有特别的这个要加装的部分，那就是普通配置的车。now it can help. this is the sequence in the morning,they say,we want to produce the cars exactly in this sequence in our factory.um,this is important because with this in the assembly and in the paint shop on and in other areas we have a smooth equilibration.of the workload to the to the people嗯，好的，那我们看到啊，就是呃，那现实生活中我们可以说哎，今这个就是我今天要完成的所。所有的这个16台车的订单，然后呢，它生产的呃顺序是按照这样子来进行排序的，因为它啊，每个车也有各种不同的配置。what happens now is in this production. they have to,let's say,in the paint shop.so we have here the paint shop.paint.shop,so they bring in the cars in and they let it paint,for instance,this car will be painted.er then er the next one.呃，will be painted呃。then this one will be painted,so the caste stepwise will be painted,but er unfortunately the first car i call it here number one number two.number three,number four. unfortunately,a car number one has to be repainted.because it is not a.it is not um not OK,but there painting can not happen immediately.it will be repainted after car number four.because the other cars are already in the paint shop and then we have to re when we want to repaint,we have to put it at the end again.嗯，好的，那我们呃来看啊，就是现在我们的这个呃，这几台车的白身呢，先要进呃，这个油漆车间对吧？那我们按顺序一台一台在排队。一二三四然后呢？那第一台嗯涂涂完呃，这个喷完以后呢？发现诶它这个还是不太行，我要重新再喷一下，但是呢，这个时候你不可能说呃。嗯，进了这个呃喷涂车间出来以后马上再重新喷涂，因为后面还有订单等着，所以说呢，他要等一会儿，对吧？他要跟在这个。呃，四号订单后面啊，等四号喷完了，我才能重新喷。but now it can happen that a heavy car which is coming back is nowhere again.and here we have next car,which is also heavy. so there are then two heavy cars following each other.which in the assembly make a lot of problems?嗯哼，好的，那这边呢？会出现呃什么问题呢？因为我们这个第一台车，它这边。呃，是给c呃custom 8的对吧？那他进了这个paint shop以后呢？要重新喷涂，那他现在是在排队对吧？然后呢？等到前面三个订单处理完以后才能重新来喷涂它。然后呢？我们发现诶呃，这个它重新喷完以后，接下来的c4这个客户订的车又是一台呃重型车，对吧？又是这个。呃，heavy duty的就是又是这个任务比较重的那呃，你出了这个组装车呃，出了这个油气车间以后呢，到我们的组装车间呃，这个问题就大了对吧，因为呃两台的。呃h车对吧？两台的众车呃前后是呃连在一起了，那会给我们的装配线的工作量呃就是带来。嗯麻烦。so at the beginning,we always have a process we call steel body.斯蒂尔巴蒂被罚。斯蒂尔保底斯蒂尔保底。be before pending.so we have,we have in principles three main production areas.对，那我们一般来说呢，这个整车厂最后是呃一一般来说是三个大的工序，对吧？一开始是这个呃，它的这个所谓的。呃呃，完全没有经过喷涂的对吧？就是白身呃，我们会或者叫white body或者叫steel body，然后呢？再经过拼。呃，这个喷涂车间喷完以后呢？我们再来进行组装，一般就是这三大个车间就一般经典的车上呃，都是这样子的，一个组织形式。now what they do,because this is now delayed,this vigour,which should be earlier,is now delayed. so they build a buffer.between er er,between paint and assembly and store the some cars here in between.and then when this car is entering here,then it is er again put before all the others,because here we have.眉笔共200元，200出。a dass eus had to read three erso all the other cars who have been established have produced before are waiting here now for him.to come in and later to go at first to the assembly,so we have the initial pearl chain.reestablished.嗯，好的，那我们如何来解决这个问题呢？呃，那它这边呢？就是会有一块的，就是在ping top出来以后，在我们的图中。呃区出来以后呢，我们会中间放一个缓冲区，放一个buffer，然后呢，前面它完成的这个二三四这三台车呢，都会在这个缓冲区里面先等待着。等到这个一号的车回来，就是重新涂完以后重新喷完以后呢呃，进入缓冲区，然后呢，这个重涂完的一号。一号呢，先出去啊，进这个组装线。now,how is the difference with fogg's bargain with fogg's bargain? they also have such a chain,they have also a sequence of cars.but the yer have other idea to organize. they have the steel body,and here they put all the cars in a sequence.saying this are,this is er. these are the cars I say for customer.er two customers,even and customer nine,because they are er left er the steering wheel is on the.on the right side,so here the criteria is a steering wheel AH.so they put all steering wheels.left first and then later they have a sequence of steering wheel,right?steering will right.so in the industrial body,they produce May be according to some groups here in the paint shop.they group others according to colors.呃，so they put a customer five，customer three，customer。customer two,customer nine,because they are red and the other customers are maybe yellow.then they have customers呃，which are。呀，white。so they build now new sequences which are part of that complete sequence. so they have,and here they have a sequence which is according to steering wheel.here it is a sequence according to pain in the assembly. they have eventually another,which is indeed again.according to heaviness so that they have heavy.that's heavy. and then they have normal.呀it May be low。t so then they can always pull the corresponding a car from this. let's say buffer.hmm,um,yes,yes,it's good.OK，好的，那我们前面说的这个第一种呢，就是中间有一个缓冲区的方案呢，是我们这个梅赛德斯奔驰它的这个，我们叫它珍珠链这个解决方案。对吧啊，就是嗯，放一个缓冲区去，等待那大众的解决方案是怎么样的呢？它这个是叫我们所谓的逐步释放订单，对吧？那它这儿比如说先在这个stupid body就是在白升的时候呢？我的这个呃组装的先后，它这边也是有一系列的客户的订单，对吧？同样是按照这个。呃，这个呃，顺序就是下下的这个不同的呃车的订单对吧？呃，这些要求也一样，那大众是怎么处理的呢？它就比如说是把。呃，这边开始进行分类对吧？在这个。摆升的时候呢，我把所有的左舵车的要左舵车的客户分在一起先处理，对吧？比如说是C2C7c9，他们都是左舵车的，然后剩下的呢，我把右舵车的。再放到一起嗯然呃，那这个呢呃，等到我们这边白色弄好了以后呢，再进涂装车的涂装区域的时候呢，它又再进行一次分类，对吧？把所有的比如说嗯嗯，根据颜色红色的所有的车呃先进去，然后呢，再是进黄黄色的，再进白色的，比如说啊，然后呢，等我的这个油漆车间出来以后呢？我在组装之前再按照诶那个先做ha vicar对吧？这个最重装的，然后呢再做呃，这个标配的，然后再做低配的。那呃，这个呢？就是我们呃，这个大众选择的呃，解决方案嗯。now in the fox in the merci e des's case,it is clear that this car is belonging to a free fixed customer say with this car belongs to mister chen.then,this car which is also normal belongs to MR lee.here,then,this car here er belongs to m normal normal with next normal.t.miss long eh,this miss one scarf haha clearly,so we have sweet different customers,but all of them are normal.what happens in case they have a problem here,they say,AH,this is mister chen. but then they rearrange here say,but this is this car,which is.erm not with which maybe is normal er,let's say this is normal.then we have car number.six,which is also normal. let's say this is a six.er customer six,then because of problem here,they say no,the new car. this is mister chen.and this will be miss one. she will be produced later,so what they do is they take the car and rearrange all the time.the customers and as long as the cars are the same from the from the structure because they are May be steering with less.and this is also steering. we left er then,then they are able to,to to change all the time and assign the customers because the customers in mercedes are started to be.in principle,on the beginning,they already know which customer but in the fox dog in case they assigned the customer after the painting.and here the defined the defiant.custom is fixed.so we have a flexible customer assignment here while we have a fixed customer assignment here.嗯，好的，那我们来对比一下啊，就是梅赛德斯的解决方案和大众的解决方案有什么不同，那我们可以看到大众呃，梅赛德斯的解决方案，它是。一开始就是在白生的时候就知道呃，这个我们每辆车对应的是哪个客户对吧？就比如说呃，这个呃，第一台车，第二台车这个。呃，比如说第第一台这个呃标配的车，它是属于陈先生，然后呢，第六台标配的车是属于李先生，第三台呃，第第15台这个标配的车是属于王先生，那他在这个过程中。他就是呃，这个单子就属于你这个人，他是一开始就定死了，那在大众的解决方案里面呢，我们实际上他一开始是打散了的，好比说。呃，我的这个嗯呃，标配的车都是左舵的车，对吧？这个c2这个订单我我可以说一开始这个c2呃，那这边呢呃。本质上应该是一开始是属于陈先生的，对吧？但是呢，在这儿的时候其实是没有这个说法的，他只能说哎，这个是一个左舵的车，那哎呃，然后呢？那我们这个。c2的订单好比说进了这个涂装车间，我这边要重新喷涂，那我可能就呃后面的一台标配车，我就先顶上了，对吧？那我这个呃。呃c6这个订单就先让给陈先生，然后呢？这个呃重新要涂装的这个c2呢？我就让给王先生了，也就是说在进组装车间之前。它这边只要是前面的配置是一样的，对吧？它的白升和喷涂的部分都是标配的，那它这个订单呢？并没有说。说这一定是王先生的，还是陈先生的这个呃，这个还没有具体归属，对吧？那这样子的话呢，它的这个前面的白声和涂装，万一有延误，它就可以去。对我们的生产线进行一个灵活的调整，对吧？对这订单进行一个灵活的调整，就是呃去适配，对吧适？是去呃，我们可以说它是一步一步的去释放这个订单的，一直到呃组装线之前那呃。才具体的去确定说唉，这辆车是归属于哪个customer的，哪个客户的对吧，因为这边就装配的时候就你每里面的配置就会不一样了嘛。所以说这就是他们两者的这个呃，不同的生产方案的这个不同的解决方案就是在这个产线上嗯。so er here in ater the advantage,erin the sid's case is we can start. let's say at eight o'clock in the morning.嗯。ander,maybe i don't know the production time,but er let's say er twelve hours later. it's t,it's.eight o'clock or er in the afternoon,so eight PM.this is a MA car is ready.it is clear they try to keep the sequence all the time,so they know this car it will be twelve hours later.er ready in the fox bargain case,we don't know this carer maybe start at eight o'clock.in the morning.but can be that it is already ready at ya maybe eh um?呃，five PM。but this car,which is er er er eight hours er plus one. this is ready at er.呃呀呃呃呃AD plus five。so er there is not a clear.lead time or throughput time because they are rearranged all the time in the process again and again.嗯，好的，那我们来对比一下，这两种解决方案，它的。啊，各自的都不能说哎，哪个一定呃比另外一个好，对吧？它各自有各自的特点，那像呃梅赛德斯的这个解决方案呢，它的好处就是呃。呃，因为我们的呃订单和客户呃，一开始就挂钩，包括它是以一个呃完整的订单的形式进进出我的整条的装配件，对吧？从白生开始，一直到组装完成。那呃，我一般来说呢，也都会呃，比较准确的来估算出我这个车子呃，什么时候能够完成对吧？比如说我呃，装备一辆车平均的时间。呃呃，我知道的话，比如说呃，就像之前我们smart那个里面它装配一台车一般，耗时是12个小时，对吧？那我如果这个订单早上八点钟开始呃，进入我的整个的工作流程的话。那我就可以呃，预计出来那晚上八点，他这个汽车就呃完成了，对吧？这个第一个ce的这个订单就完成了那。那在大众的这个case里面呢，它就说不准对吧，因为哎，有可能这个呃，第一个订单，我在下午五点就已经搞定了，那第二个订单，它可能因为。哎，重新的又被rearrange了，对吧？就被重新调配过了，他可能要到晚上23点才能够被完成，那因为他在这个呃进入装配线之前，他们的这个前面的步骤。呃，标准步骤一直是在呃被被进行重新的排成被呃呃调整对吧？呃，所以说呢？呃，我们并不知道这个单子它具体。呃，在几点钟？或者说具体在哪个时刻可以完成？now you May ask,why do we use this concept or or why is the other company using this concept?here in this concept erm.the the advantage of this concept,it is quite clear they know the supplier when they have to provide pieces.they know exactly er which piece at which time they try to keep the time. so this supplier scan can get very early.already,an information when they have to supply their pieces May be the engine or maybe the seat.in the other case,we have the advantage that we can make a stable paint planning. we can plan all that red colours in a long sequence.so we have a better quality of the different colours and eventually we have a better quality in the steel.er production because we do not have to do so many set UPS for the robots,so here we have more stability in the production.while here we have most ability，eventually for the supplier side嗯，好的，那呃，我们呃，同学们可能就要问了啊，为什么有的厂家选择的是第一种解决方案，有的厂家选的是第二种解决方案？对吧，他们各自选择的原因是什么？那我们可以看到在这个梅赛德斯的这个呃case里面呢，因为我们这个订单它呃。它是一步一步完成，然后包括呃，它的整个的这个呃时间的，包括它的用料对吧？都是比较呃确定的，然后呢，它的这个生产的流程呢也是。呃，相对来说比较呃，我们是可以预计的到的，对吧？那呃，我比如说生产到某一个步骤的时候呢，我也可以估算出哎，我这个订单。呃，这个比如说有一些材料我缺了，或者说是我现在的用量大概呃，比如说某些元器件大概在什么时候我会用完对吧？那我就可以呃。比较准确的去告诉我的这个供应商嗯哎，你什么时候可以再给我提供嗯？物品了，或者说提供呃零配件了，对吧？那对于这个呃信息也会比较通呃，这个呃，怎么说呢？就比较容易传达到我的。呃，供应链的那边呃，就是传达到我的供货商这边，因为我的整个生产计划实际上是比较处于一种比较可控的状态，对吧？那这个呢？是它的呃，这个优势。那另外一个呢？因为我们知道这边它是一直在进行调整，但它的好处呢是比如说像它在油漆或者说是在这个前面的这个。外八类的阶段，因为我这边。大家也看到啊，我们的这个呃，这个流水线上的，包括现在也都是用这种机器人，对吧？那呃，如果说好比说我要换。呃，喷漆的时候对吧？如果我喷不同的颜色，那我要重新要换对吧？包括喷头啊，包括哎，你要重新进行清洁，甚至哎呦，如果你前面一个颜色，它有。残留的话也会对我的质量产生影响，所以说你如果比如说把红色的车全部集中在一起喷，然后黄色的集中在一起。这样子，同一个颜色集中在一起呢，它能够保证我的质量更稳定，而且呢，不用一直去花时间去重新的。这个呃，一会儿变一个，一会儿变一个，对吧？那包括这个在摆身的时候也是这样，我左舵的车都一气儿都装了那呃，我因为我们机器人如果装左舵的话它。呃，它的这个呃，这个呃，机械臂肯定和装右多的时候是不一样的，它要调整的对吧？那如果说是你呃。把同样的东西归在一起，那相对来说，这样的产线的生产质量就比较稳定，而且它的整个的这个效率也会高。对吧，但是缺点呢，就是说我们的整个lead time呃就不可控呃，就不可控了，它有的可能很快就出来了，有的可能要等好长时间，那它们两个各自有优点。也有缺点，那我们这个第一种解决方案呢，我们说是对这个呃supplier对吧？对我们的供应商呃相对可控呃比较呃容易管理，那第二个呢，它是对我们的。具体的生产的步骤和流程，它的质量对吧？可控性更高嗯。um,this has consequences also for the let's say for the paint shop,hear the paint and hear the paint they are different.er,this paint has to be very flexible for changing different colors. this paint is eventually a lower price because they do not have so many.um,the changes of colors and er eventually the quality there work is smaller er in this er production system.嗯，好的，因为他们这个不同的组织形式啊，我们也可以看到呃，就包括像我这边的呃喷涂车间，我选的这个机器人，或者说我选的这个。呃，这个档次都可以不一样，因为在梅赛德斯的这个case里面，我的这个呃喷涂的机器人呃，可能一直得。换颜色对吧？那它如果在这种情况下，那你得快速的能够换颜色，而且要保证一定的这个质量，对吧那呃。它这个呃肯定要比下面的那种哎，我一去把这个所有的颜色都喷掉的，这种成本要高，对吧？那下面的这种呃，这个大众选择的。这个解决方案，我的喷涂车间就不用这么高级，我用一般的这个机器人就可以做了，对吧？那第二个呢？就是呃。它的这个呃，这个梅赛德斯的解决方案呢？它的这个重重喷率肯定要高于大众的这个解决方案，因为它呃，它的颜色就一会儿要。换嘛的，一会儿要换，那它可能如果你有一点残留啊或什么，它可能就要进行重喷纯涂，所以说呢嗯。相对来说呃，你的不同的组织形式呢？呃，对我们的装备啊，车间的装配呃，装备的需求，它的都是可以造成不一样的这个。呃，需求就是它的都会影响到哦，这个装备的选择。an an interesting concept is when we compare this with the smart the production of the smart part because they are all having a also kind of a pearl chain.but the pearl chain is not er er because of heavy and normal ander ur.light or air or engine driven,it is AA sequence which is.completely free in principle May be like a fee for principle,first in first out,but it is more a principle which is saying OK,all these kinds.cars are going to maybe France,let's say these cars are going to France. these cars are going to Finland,these cars are going to China.so the group is depending on the destination and not on the content of the world.嗯，好的，那呃，大家呃，如果还记得我们上一回给大家看的这个smart的案例的话，呃smart呢，它也是类似第一种的，这种珍珠链的模式。但它呢，又有呃一些不同呃它可能呢，就是根据订单，它最后的这个呃客户的归属对吧？就比如说呃这台c5的车是法国客户定的c10的车是德国客户定的c10的车是德国客户定的。15的车是呃，这个呃，北威的呃，北这个这个叫什么北欧的客户，丹麦的客户订的芬兰的客户订的它是根据它最终的归属地。而进行了不同的一个区分。so this means when we are having always groups of cars going to destinations that the steel body and the paint and the assembly have to be very,very flexible.because they have a lot of mixtures and nobody knows maybe a lot of heavy cars are following,then a sequence of low low content cars.t.the sequence is deep,eh has to be maintained and therefore the flexibility has to be in the different u.t.production areas.好的，那因为呃，我们之前也看到了，就是smart他们那个工厂是不是用铁路啊？然后呢？它所以说它的生产呢？要根据它最终目的地的。这个情况来进行分组对吧？那我比如说运去芬兰的车，我都在呃呃都都都要放到一起，最后运掉对吧？再赶在哪个时间点前面？那呃，这样子的话呢，就要求它的整个产线都呃，包括我的白生，也包括我的呃。喷涂车间也好，包括我的组装线也好，都要非常非常的柔性，非常的灵活，对吧？因为我这边的话是呃，同样的目的地的车呃，你可能都不知道它里面这个。呃，这个到底是怎么配置的？它可能完全都是呃，不一样的对吧？包括白升部分，或者说是涂装部分，那就要按这个就要求它的整个的产线在过程中要非常的灵活，那我在。其实在呃，生产过程中我都不知道你这个订单到底是到底是谁的，或者说是到底怎么调整的，因为它其实一直在不断的进行调整。and the paint for the smart is totally different than the paint for the others,because smart is making the paint of the car.er with the plastic components er the plastic components are put in the assembly er to the car,so here we have.eh,let's say in the assembly we put eh?plastic.components.here we have only the frame.and the frame has only two colours,a dark color and a light color. so here we have a very few.numbers of paint the the the impression of colour is put into the assembly to the car while we have here a lot of different paints which are painted.嗯，好的，那我们smart它的这个呃，这个喷涂车间和前面两个例子也是完全不同的，因为我们看到视频里面啊，它的摆伸出来以后呢，进入喷涂车间smart只有两种选择。要不然你是呃，这个深色的呃涂装，要不然是浅色的，然后呢，到后面具体的呃，你这个不同的组织的方式对吧，我们也看到它是这个。小车也是花花绿绿的，它都不是通过我们的喷涂车间，而是通过这个加装这种不同颜色的，这个塑料的组件对吧？那这个塑料组件是由我们的供应商提供的，所以说。它这边的话，它的油气车间只有两种选择，选择非常少，那所以说它和我们前面两种呢，又是不一样的，这个组织形呃，又是不一样的解决方案。OK呃，let's make a break呃five minutes break。好，那我们先休息五分钟。ouy in chapter,I'm probably in schwarzenegger,veda's chaff anke ne rin,the of commandant BO gur is minus,is de comte de bourg her.呃呃，为什么要做二电焊？奥斯特洛夫斯基哪对对首歌。我们这that is什么时间看，领导没按扣跟嗯。sist.谢谢照顾你。and that's east.does is.they are auxtunsfanciston.on the octant instructed the octant's van's sister,aunt wil helmed,an arch TIC folly's owner factory planning.呀，对对。yeah,it's fabric plan. no.acquaintance to the all ign er to extinct was must be attuned amid to the all ign er to extinct.嗯，以后都不。you can so feel it again.ya dun MA hum with US i video video video willing was we own star was we US we we US managing with him，但this is Uber nex for her。t.呃，但是说你太了风机嘛。一二。yeah,the sir does come and does quentin evising up to thus fish teased was germain tis of a clare,but thus where I am am og li cat and couldn't be a these by these are tiled in common hero use ln.二爹is needed in norman up blow ST ling。they have not an under est problem that is immune eh center efta on sf ta.er,does this? v does this monarch thinks like me at wall?this hat is to UN UN functional as the UN functioned ham da most is to outdrive to argue.那预报不对劲。um,i'll just sit to our SAT oct as I'm sent in effluence with yo NY vita pass I um watt.tanistambitians immolate sch wandering division dani star go no metering division or dani stam bit ian.tint the ef ts wftytintef ts wfty我还是我老婆的逼雅达mush I light wil obma。t.did the schneider get to Chengdu,but sphere lets him up look? did the railway a hub in the store?听白椒呀，大哈子点点嘞个葱dip laps嗯eglobzogadiplaps no dien tag。y嗯y dn。t.t.ye aok,he cann't for z ho kon does the knower of tea narc no in tey n old elf to be gr ends on.not,as you know,fiatargen mahren will love with them the cis an rice to the cis ana phy rig az akh while he decants its a kind and will of mar han nicks.e rest a's depremient met a violet wouldn't finish enough twi bo ni nhi na bas hin le yum.as though is his h pee le MIT,my name lib,would it ye le phon my lib nine? is it's comparable lym ish g lou bbe rdomacksinemem AH wu is hem?t.t.t.on the after have to be on noir,I know for ism is our camp blame er for null t wif TT wifterhast wight for is mona n tme.i's quentin thoughts im zai da's AP h tha l mic dux swerved when he earned woe BI ni um wo a log is that my no dutch land or they're found.MID volk turk then verde feliknametach does an above for mita g nal yeah herd as mussi eno madi scout tien. it cloaked by if I sc and ig mal de mi d volk for me tach is taser go no my MA s vad as nomad.呃，怎么来求？swear for fighting is a fat is the economy.嗯。as a ergo no,my gingham nodded asti MA sim URL attune miss vigour laying bas per bascom be o he he club. my lame is vaguely schwa rg of odin.I skipped anu na MU clic cat does d the呃zimba bisfiftermarks our han dubo。e hour er sweating my unsting ander give this an gly hitchen I know hus to tian mitten dang malva ssi's fine part of mitter mitten hin lies ESTA shia n clara.where this is your auction,this for for the sunk,this for the hind flint,yeah,it fines it's that im perseid I able her.it's knocking so guns and claw,and it's sucking in the shade. water is while the vice to twelfth,then we're done by your son fits in the fluke,oh.yeah,nine,nine,nine,six intent does andrea e corp in ods fancies days fluke as I know bah ush Peter can a bazin DAS of filths in tsi on fluke where?嗯OK，你要h8干嘛？嗯OK。好的，那我们继续这个后面的课程。索玛雅嘛，拜托。雅芬菲诺德尼斯尔克纳。对，也可能。嗯，好的，那刚才前面教授也是给我们讲了一下，对吧？这个不同的呃，公司它的这个解决方案找到不同形式，对吧？那我们可以看到。像这个smart，它这个解决方案就很特别，对吧？它这个基础的调色在paint shop里面就两种颜色，然后呢？它找了这个呃外包的对吧？这个。呃呃，外包的这个供应商给他供应彩色的这个呃，这个装组呃组组件儿对吧？然后呢？他就像拼积木一样，把它拼上去对吧？那这个。呃，可以满足产品的多样化，然后呢？又没有呃，让它的这个装配线变得复杂，对吧？它这边而且还可以定制呃，克制化各种，你可以拼不同的颜色，对吧？你白配黑。也好，红配绿也好，你随意，你喜欢对吧？你可以用不同的这个呃塑料件儿嗯，这个它是这个do not make呃，我们记得是那个do not wish a nobel这家公司给它。供的对吧？那我就在assembly的里面，我在这个组装里面再去呃，再去定制这个，再去做这个个性化，那我的这个ping这边就可以搞得很简单。so when a car starts here at eight o'clock.then,in smart,it is there are at four a pm or.so sixteen look.er,it leaves the factory,so this concept is faster for the lead time for the throughput than this,and then that.嗯，好的，那就像这样子的话呢，它呃，比如说一个车子，你白伸进去，八点钟早上八点钟开始灌，对吧？一般来说下午呃，四点前就能干完。那它的整个的呃throughput time对吧？它整个的。嗯，流程就要比我们前两个的解决方案要更快。well,I hope you understand now the seer basic concepts e rander exactly. this I ser what we try to er explain with this er.slides here,well,we say,OK,eh? we are having.uh,the h the production potential assigns the company performance,the company performance depends on.such factors as described here how the sequence of orders can be produced嗯，好的，那呃，刚才呃，刚才呢，大家教授也给大家介绍了一下不同的这个生产组织的形态。式对吧？那这个呢？也是我们这张讲义里面呃表达的这个意思对吧？你的不同的这些呃呃生产的潜力也决定了你的这个公司的各种不同的表现。对吧，表现呃，最终的不同的表现，那在这一块呢，你不同的组织形式呢，就是我们在因为你你呃，你公司选择了哪种组织形式也影响到我后面对你工厂的规划，对吧？ander,when we look into this criteria here,for instance,the building here,mercedes and dis ald off,who is where they produced the transporter cars?er transporters er they are building the cars on pool levels of the of the factory. they have not enough area,so what they did is they,they,they.have in principle two floors and produced on two floors,which of course is a disadvantage,because we need lifts between the.different production steps and the lifts are area delay and also a kind of risk because once a lift is has a problem.嗯the the two the different areas are decoupled。嗯，好的，那我们像这个举个例子啊，这个area and building就是那我们这个梅赛德斯在杜塞尔多夫的工厂呢，它是生产呃。小型的货车啊，小货车的那它有两个呃，就是高档和低档的两种的不同的品牌，那它就是把它的这个不同的这个呃。这两两种车型呢，它就分在两不同的这个呃层，对吧？分成两层来做，就是在不同的这个呃。就比如说一个是在底层做，一个是在一层做。here,the staff structure is defining about the qualification of the people when the people are highly qualified. we can do.a very flexible assembly because whatever car is there they can do in a in a very efficient way because everybody can work everywhere.嗯，好的，那我们的整个的员工的这个结构呢？呃，也是因为呃，它肯定是有一定的不同的，这个就比如说你有多少的基础的员工，对吧？有多少的是这种比较？中高级的那如果说你的这个员工都是呃一个档次的话，那每个人都可以在呃任何的岗位工作了。this location and factory structure is also a criteria. this one and this one and portia,for instance,is producing the white body.in Slovakia and maybe five hundred kilometres far away is the assembly. the paint shop and the assembly,so they have splitted this.the different production steps and in between the cars are transported by trainer to the pane from the steel body to the.paint shop and to the assembly嗯，好的，那嗯，就像我们车厂啊，它有的时候呃，包括整车厂，它自每家人家它的这个呃，包括组织形式和物流这个形式，它也是都不一样。对吧，那我们前面看到的案例一般来说我的呃白升和这个喷涂车间和最终的组装的产线都是离得比较近的，但是也有也有不一样的啊，就像那个。呃，刚才教授举例子在呃，这个呃，大众在斯洛伐克，捷克斯洛伐克的这个公司对吧？它的这个生产厂家，它就是呃，它的喷涂车间和我最终的这个。嗯，最终的这个组装车间，我们呃它之间就有五百五百公里的这个间距啊，就距离那它一般来说喷完了以后呢，它都要用用火车。呃，这个每天去呃批量的运送到我的这个组装车间整车厂去。a company's like a smart are not producing anything,they are just assembly factory,there is the smart car is in principle a num.a car which is er where the components are all of them are made by suppliers and everything is put putin to the.let's say into the assembly,even the painted car is belonging to a supplier and even the steel body of the car belongs to a supplier.so this is a pure super production of of assembly,while other cars maybe ford or.er fogg s wagon are producing some pieces on their own and collaborate only with a certain fraction for the goods for supply with supplies.好的，那我们来看一下啊，包括这个呃，就像我们对比嗯，奔驰宝呃，大众和这个smart这个形式啊smart它其实是。呃，相对来说是一个很特殊的案例，在它的这个工厂里面，它其实是没有进，可以这样说，它是一个纯粹的一个组装厂。它的呃，我们之前也看到它这个十字的组织形式里面对吧？在我进入最终的装配产线之前，这个组件呃就包括像它的那个装饰板，对吧它在？呃，装进我的这辆车之前都不属于呃，不属于我对吧？不属于smart，它是属于denominational beard那呃，直到放到我的产品车里面，它才是属于这个smart这台车的。那呃，本质上来说呢，它是没有生产任何的东西，它只是来做一个最终的总装装配，对吧？那跟我们传统的像大众啊，奔驰的这种厂又不太一样，因为呃，大众奔驰这种呢，它还自己还做一些生产，对吧？比如说一些核心部件啊，或者说是关键的一些，像这个关键的一些，这个底盘系统啊或等等的，它还是自己做的或引擎之类的，对吧？还是进行一部分的生产，然后再是总装那smart这种呢，就是纯粹的就是呃做装配的。and eh,also the organization in logistics is very different. eh,we have suppliers,uh,for audi.who are producing the bumpers in a factory nearby and some special bumpers in Spain so?so they have to transport the bumpers over a thousand kilometers. these special bumpers and to provide it to the factory.so they need a Warehouse near by,uh,while others are just producing directly aside the factory and bringing in the goods,let's say.just in.in in just in time,in just in sequence with a very short a delay or li time.嗯，好的，那像呃，另外的一个例子啊，就是它公司有一些的零部件啊，它的。呃，物流或者说它的这个组织逻辑呢，也会有一些这个特殊的案例，好比说这个奥迪，它在德国的这个一家工厂，它的这个用的这个磅啊车磅它。它呃很多呢呃大部分呢都是呃由呃一个在比较近的这个供应商来进行提供它，甚至是可以直接的。呃，生产完以后就上我的这个组装线，但是呢呃，有一些特殊的这个棒呢，它是呃，它的供应商呢，是在西班牙的，也就是呃。这个几几千公里以外的对吧？那它就需要说我这边这个在组装线的附近对吧？就呃，再建一个仓库，专门来放这些。呃，西班牙来的这些棒，那它这边呢？就会分成两种对吧？一种是直接呃对接我的产线，然后供应商呢？呃，也非常近，那另外的有一些特殊的这个需求的，或者说是一些定制款的。他可能就要单独再去设一个仓库去放这个西班牙供应商的东西。and the.will we now go to the next sip?then we will see.that this has um.er er er,a lot of consequences,this light is in German,but I tried to explain what we are seeing here.first,we have a category of the let's from the objectives point of view of the company and the factory,so May we make a difference between.factory and company because the company can have many factories or several factories and so the.the company eh maybe has a percentage of new products.maybe er er as a goal between seventy and ninety percent.and due to er current productions,they have ninety five percent of new new.cars new products,the goal is of course to have new products eh less than five years,so er let's say every four year.they would like to have a new product and the old car or the old style cars are then removed stepwise from the factory.from the and the company is not offering this,let's say old cars anymore after four years there are five years there is a complete redesign of the cars.嗯，好的，那我们一起来看一下一个这个具体的呃案例啊，然后呢？那我们这边呢？也可以看到啊，就是我们之前也跟大家说过。呃，在制定目标的阶段呃，这个这个总公司的目标和我的这个工厂的目标呃，实际上是不一样的，对吧？总公司的目标是我的基石，然后工厂。因为总公司它可以有一个公司可以有多个工厂，对吧？就像奔驰，它可以在杜塞尔多夫在在这个柏林在哪里哪里都可以有工厂那所以说。它这边呢呃，实际上它的这个目标，或者说它要看的里面的点也是不一样的，那我们先来看这个。总的这个公司的目标啊，就是o对吧？公司那啊，我这边呢呃，它east vet是指它的呃，实际值对吧？t vet是指它的这个。呃，目标值就是所以说呢，那个目标值和它实际完成的也是不一样的，那呃，它可能这个总公司呢，我希望说。呃，这个我现在有一个新品对吧？新车出来了，那我希望它的这个呃有70%到90%的车是。呃，新品对吧？那实际上呢？诶，可能我呃。回头来看了一下真实的达到完成值是95%，对吧？然后呢？那我新品的推出呢啊？这个所谓的新品是在呃这个五年以内对吧？那我就是。呃，现在开始卖，等到再过四年以后，这个我就不卖了，对吧？它的整个生命周期是五年嗯。other figures are here,the the sales in a year. this is the currently they sell one thousand s of hundred pieces,but the goal is three thousand on the other side.they,we see that the number of employed people is a thousand twenty seven instead of one thousand,three hundred,which is the goal.and here we have in the factory eight hundred and the goal is a thousand sixty. so we have a gap.between the goals and,the current values here that is also at the same time a gap in the.in the production site and,when we look into the production with,this let's say with this two hundred fifty sixty people more.eh,which is in principle a quarter more from that er,and we can produce very much more. this is if we would use only a quarter of,this would be four hundred,we would end up with three hundred.so with their established factory and with these people,we could produce many more pieces and we could be very much more productive.嗯好的，那我们呃来看一下这个公司制定的目标对吧？刚才我也说了，这个是我们的目标值，这个是我们现在的现实值，对吧？然后呢？那我们看一下它的呃，希望的这个呃，是这个年生销售呃，年生产额，或者说销售额是啊，目标是3000辆对吧？然后实际我就达到了1700。呃，1700件儿那呃，这个目标的产产值是呃，这个六亿对吧？百百万千万亿六亿，然后呢？实际达到的是三点二个亿，那我们看到因为呢？我这边这个新的工厂对吧？呃，它的这个呃总的人数，我们的工厂的总的人数预期是1060个，但是实际上只有800个，对吧？那呃，这个也是造成了它的产能比较，目前是没有达到目标值的，那如果说我这边呃把员工加上去的话，那我这个肯定是不止生产1700辆，它的产能会大大的提高，对吧？那包括我的这个呃，总公司的总的这个呃，员工现在也是比预期的要低。then another factor which er is relevant is the in principle that turnover.the casher from the turnover,let's say the shareholder value er and in both cases it should be more than ten percent. that's er.er,it is clear that in this case where we have,where we produce more than the turnover or the efficiency rate or the shareholder value would be higher than in this case,but anyway.always more than ten percent.好的，那我们这边的o mza sr end it是指的是这个销售的回报率啊，那这个啊，目标值和我的现在达到的这个值都是OK的，都是大于10%。now the next point is er here on the factory side to get the materials oer.the the let's say the the the spendings or the the moneyer.t.which is spent is eighty percent for er the materials,so eighty percent for buying raw materials.嗯，好的，那我们来看一下工厂端啊，首先呢呃，第一行的呃，是我们就是所有的呃，这个。呃，所有我们花的钱，里面有80%的钱是花在了这个呃物料对吧？原材料呃，这个material cost里面也就是说它的目标值和预期值呃，预期值和我的实际上达到的都是。都是这样子，都是80%的钱呢，是花在了呃，这个我们所谓的材料上。the next call a question I ser productivity er er per head counter.e let's say er value creation per head counter,we are here talking about one hundred forty thousand ur.when we are believing maybe a people in such factories earn sixty seventy thousand Europe a year.then,the productivity is maybe fifty percent. well,this is the productivity,but we have to also to consider this material.but in the end,what we can say is that when we compare the value creation,the head count compared to the.er to the celery,then fifty percent roundabout is era celery and the other point is a value creation.嗯，好的，那我们看到这个第二行呢，是指的每一个员工，他能给我创造的价值，对吧？那我这边呢，每个员工。大概能给我创造的价值是这个146056欧，那这个是怎么算出来的呢？是我的这个呃。这个所谓的销售额对吧？我的om zac销售额去减去上面这个material cost，就是我的这个成本对吧？那剩下的部分呢？就是我的。这个呃创造的产值，那我再去除以总的人数，那一般来说像这个数值呢呃。在呃，一般我们怎么用呢？就是它的一半就是基本上就是用来发工资的呃，那剩下的一半呢？就是我们所谓的利润了。and the factory overhead in the current value maybe twenty five percent compared to twenty percent.so this is the fraction of a people who are just working directly in the car production,while the other ones are more indirect people for administration.so in this case,here we have twenty five percent,so too many people in the factory or in the administration had not enough.on the on the shop floor,this means on the other side as well when we would employ more people here.then,this ratio would become better er because we would er. we would then here increase this number and finally in consequence.the overhead percentage would be reduced,which of course is a clear hinter where to invest in this company er look for more er people in the factory site ander.look for more customers than the profitability of this factory will increase considerably.嗯哼，好的，那我们这边呃呃，这个我这边再多说一句啊，这个所以说我们一般也看到啊，这个除以二那基本上是六七万对吧，所以说一般来说在。呃，我们德国他们的呃，这个呃，这种工工厂里面工作的这些呃，人的年收入差不多也是这个数字，所以说呃，这边还是。呃，这个是一个真实的案例啊，然后我们看到这个factory的overhead呢，是指的是除了这个在。呃，工工厂里面工作以外的这些人就是除了真正进行工厂作业的人，那他的overhead就指那些管理的，或者说秘书啊，这些财务啊，这些人对吧？那我们可以看到它这个现在是超超标了，对吧？那我们一般来说overhead这些就像我们学校也是这样子一般的这种呃。行政人员是占20%的样子，那现在它是25%，这个原因也是非常清楚，因为这个工厂还是新的嘛，然后他的工厂里面招的这个现在是800个人，他是低于我的。呃，预期要招的人的对吧？如果说你这个工厂把这个呃预期的人给招全了，那它这个overhead基本上还是控制在20%以内的，对吧？那现在的话，它这个总的人数啊，没差多少，但它的这个工厂里工作的人数啊，远远的要低于我的预期啊，那这块呢呃，也是明确了，就是我之后哎，多出来的盈利的部分的钱要投入到。哪里对吧？那我这个钱呢？就优先的去考虑，先把我这个工厂里面的呃呃人要给招齐了。TeX kepi is how many hours do we need to produce a car? there is the goal to produce a car with five hundred thirty work hours.e rander in reality they need at the moment six hundred seventy seven work hours.of course,the more work hours we need,the more expensive is the car,because er all the workers have to be paid er for every hour they work there.er,and we see that there is a big potential here to,to,to improve the.to improve the efficiency from bringing it down from six hundred seventy seven to five hundred thirty hours.e hand with this reducing the cost of the production，嗯好的，那下面一个呢？就是指的是每辆车生产所需的这个。时间对吧？这个人工的时间，那现在我们的预期值呢？呃，是530个小时，但实际上我要677个小时，所以说这一块的话。就有很多很大的一个优化的空间，对吧？呃，因为呢，你如果耗的时间越长的话，那我这个产能就越低，对吧？而且你呃成本也会上去，所以说这个呢它。它就是呃，需要这个体呃，最需要被优化的这个部分呃，最有这个进步空间的地方。and here we have the next keep your eye,which is efficiency,kind of efficiency of performance er.it is er the number of hours er which are recorded.eh compared to the number of hours which have been.er planned according to the er according to the document documented.um production times,so what we see here is we need more time. ninety five million means we need more time er with people.being in the factory then,then they should do for producing a car so that the.there is a gap between the hours which are planned and the hours which are really where the people are really there.嗯，好的，那我们这边下一个KPI呢是呃，这个效率啊，那这边呢呃呃，指的是就是我计划的时间和实际上的我员工工作的时间的之间的这个。呃呃，差别或者说它的呃，它的这个呃效率达到多少对吧？那就像我这边的计划的这个时间。呃呃，或者说它计划的效率是呃是95%对吧？然后它实际完成的只有84%，也就是说呢呃，这边还是呃有非常多的提高的这个空间。也就是说呃，这个呃这个呃，比如说我实际计划的呃，时间是100个小时，但是嗯。但是我的员工呃，真正的出现的工作的时间只有84个小时，那我这边就是所谓的84%就是我的计划和我的实际员工工作的小时之间的这个差距。this hourserwhaterso people are in the factory.and the plant hours are lower,how can this happen? well,if there is a breakdown and the complete production is stopped.even for a short time,then all the people are there doing nothing or um ya doing some preparation work,but this means.every time something goes wrong in the production and the belt has the production line has to be made either slower.or has bea has to be interrupted?er the same when we are er considering er,let's say time where people are.are leaving earlier,er er because of illness or so,then we we we get gaps in the in the recording of the production hours,and this is then.the efficiency factor imprincial or performance factor from from a time point of view.嗯，好的，那我们呃，这个呃，这块呢，它的效率为什么会出现这样子的？这个时间上的偏差啊，我们因为不去考虑它的呃，实际的这个产值而去考虑的是它的这个。出现的时间对吧？那呃，这是什么意思呢？就是说呃，有几种情况啊？第一种情况就是说嗯，我的员工人是在这个工厂的，对吧？呃，他可能早上我他那种呃，我们像这种。呃，工人一般都是打卡的，对吧？但是呢，他可能哎，这个机器出现了这个breakdown对吧？他这个机器。呃，出现问题了，那整条产线可能就停掉了，那我的工人人虽然在，但是他他没有创造任何的产值，对吧？那所以说呢？呃，它中间就会出现这个所谓的计划时间和实际工作时间之间的一个。呃，这个呃gap对吧？是出现了一些区别，那呃，另外呢？呃，就是比如说我们的员工他。他由于自身呃请了病假，生病了，或者说是工伤了等等的，那也是造成了呃他实际的应该工作的时间和计划，我们计划的安排他的时间。中间差产生的这个差距，所以说呢，这个也是呃，我们这边的这个呃，效率呃，从时间方面去考察它的出现的这个百分比。at here,we have production area per person um this er,the intention is to reduce iter without fixing it.but er the problem is er in case we are having er a lot of materials. er in the buffer spaces.eh,then we uh are wasting area or place production. uh,eh place?eh,which cannot be used for other type of production,so eh,what they try to keep it low is let's say if we would have a just in time.just in time production,then we would need nearly no buffers and then the production area per person.w become reduce.嗯，好的，那这一块呢？主要是来看我的这个呃，这个呃，场地的使用效率啊，因为我们呃这边呢也是是对。呃，所谓的每个制造商的生产面积占有的百分比呃，它的意思呢？就比如说我们之前也是给大家介绍过有不同的这个生产组织的方式，对吧？那像我们呃一般来说的这个呃，自由的流水线。那它生产完了以后嗯，如果没有按照这个j sent an或js sequence，那中间是不是会有一定的buffer的区域？对吧？有一定的缓冲区，那这些缓冲区对我的生产本身来说，它这个。是多余的区域，对吧？它是呃，它只是为了缓冲一下这个临时存放一下那嗯，那像这个如果我们比如说用just in time或just in sequence这种生产模式下呢，我就完全不需要这个缓冲的。去那我的整个的所谓的这个呃productivity就是production的这个area是不是它占的比例就高了，对吧？那它的面积使用效率就高了。but we could also put more people in because we are missing people. so if we would put more people in the productivity would increase and death.space the area per person would also be reduced.嗯，好的，那另外呢？一块也我们也可以增加我们的这个呃工人对吧？那如果说是这个单位呃面积里面增加员工。多了以后呢，它的生产效率也会提高，那我的整个的浪费的区间也会减少。well,I hope you've got er er a good inside how this er. let's say factory white er,keep your eyes accompanied.and how productivity can be assessed,it is because in principle on a very high level.eh it the managers of the factories are responsible for keeping these values high. it is or in a positive sense.er,so it we have. let's say continuous,a continuous work to do by reducing the number of hours per car.from six hundred seventy seven to five hundred thirty and every idea which allows US to do that is very good is cutting down the costs.嗯，好的，那我们呃也是希望通过今天跟大家梳理啊，就是我们一般来说一个工厂或一个公司，它是以哪些KPI来衡量我们的呃，这个公司的好坏的对吧？那呃，就是每一个公司的管理者呢，他都是有义务呃，让我们的这些呃图表里的这些数值呢，是能够有一个呃。正向的或积极的反馈的，对吧？就包括我要降低我的这个生产成本，然后提高我的整个的利润率，对吧？那呃，包括呢？去提高我的生产效率等等。and this has priority one. so here to increase the volumes,the sales volumes,this priority one.the turnover priority one,this means sales multiplied with the price of the car.eh the turn,eh the shelve,the value of the the cash return is priority one uh the.a new product should have a higher turnover priority,one and of course reduction of time per hour in in terms of hours for one car.嗯，好的，那我们呃，这些KPI里面呢？我肯定也要看它的这个优先级是不不一样的，对吧？有的需要呃呃。尽快解决，那像我们这边，它有一二三四四个等级对吧？一是最高级，四是最低级，那我们看一下它这边，比如说这个公司呢，对对于总公司来说，我要提高我。我的这个生产效率对吧？我的这个提高我的销售量，提高我的销售额，提高我的这个投资回报率，对吧？提高我的整个的新品的这个占有率，对吧？啊，对我的这个销售额。里面新品的占有程度要提上来，那这些呢？都是我是属于呃一级重要的，对吧？那呃对于比如说是物料成本啊，这些它这个。的优先级就比较低，包括呃，包括我的一些这个哎，这个人员上面的这个比例调配它都不是最高优先级的，那但是呢，我们的要提高这个生产效率，对吧？现在就生产一台车，你需要。的时间太长了，对吧？那这个呢？也是要呃，总的来说你提高了效率，以后我才能完成我的所谓的这个产能和销售额，对吧？所以它们也是相辅相成的。嗯，那这个呢？也是一类的，重要的这个KPI OK？now we come to a step about basic data evaluation.ander,yeah,this is on one side. we have kind of side planning. we see this here.but we have er then operating resources structures,domain structures,generous structures,building structures.er and the idea is to come from the big picture down to the er yard and the detailed planning where we are on a very operational level where we exactly know.where are the boxes? where are the conveyors while we are here more talking about the buildings of the generous structure,and here the buildings?the general structure on the factory side where we have a lot of buildings.and then the production areas like dor,the main structure where we talk about paint chopped steel production.i compared here now with automotive industry and they will see the the workplace of a robot for me.嗯，好的，那我们接下来呢，要给大家讲的是这个呃，一些数据的评估，那我们。从呃最初的这个大致的选址对吧？到我们的呃总体的结构设计，到呃到我们的这个呃建筑的结构图，到我们的具体的哎哪个车间要做什么？到我们具体。到哪个产线？对吧？到我们的这个operating的level就是到我们的操作层面，那我们所有的东西都是呃计划都是由粗到细的，对吧？那呃，那我们这边呢？就要来具体的来看呃。深入来看呃，到我们这个具体来分析是怎么来进行呃数据的采集，包括我们的评估，包括我们这个factory planning里面，我们怎么来做它的？t now when we look into the analysis database,what can we accept em?examine and呃。the this er analysis we can do here this specific analysis,we can only do when the factory was already.呃呃s it，but呃。er but er not in a planning phase erso er,this is already more operational data.嗯，好的，那我们呢？呃，首先呢？呃，现在这个假定这个选址问题已经搞定了，对吧？然后我们要看一下我还有哪一些数据需要我？进进行具体的分析以及检验的嗯。well,what are these typical data? the product and production program is,uh,let's say,uh.kind of investigation,the production sequence and the production flow,a production sequence we have seen this in the percha in how we how we comply.with these requirements from the purchasing,for instance,then material flow and transporter,how is this er?how is this executed the naa concerns about stuff or the processing?the cost strategic in general building infrastructure and operating fund,so a lot of er different areas or.investigations have to be done in order to earn improve continuously a such a factory.嗯，好的，那我们来看一下啊，就是在选址问题已经解决以后呢，我们要呃，具体的还要采集和分析哪些数据啊，在我们进行。呃，具体的工厂规划之前那之前我们也给大家说过啊，我要比如说smart那个工厂，我首先要知道我这个产品呃，包括我的生产的这个呃，具体的计划对吧我的呃，比如说smart它是一个小型车那。我对于这个小型车，这个产品呃哎，具体的我的市场占有的份额啊，包括我的整个生产流程，对吧？它的这个工艺流程啊，就像呃，刚才我们也给大家讲了像。像smart那个工厂，它的生产的流程就跟传统的呃车厂是不一样的，对吧？它就是一个呃装配为主的，那这些呢？都是我们要分析的，包括它中间的一些物料流啊。呃，它的整个的这个生产流，物料流等等。now the next slide er is dealing about such an analysis and it is er er,let's say incoming orders.and here we have diagrams which eventually ya have to be interpreted,but we see the incoming orders during the different months.and the number of orders and what we see is now product groups er and some products group are on a very low level.while we are having a very interesting diagram over here,because there are some product groups like this one.which is the more dark one that's groped,a groupe is having a um.um high value,but it is going down sharply your debt's um a difficult.a difficult result,but all of the other data are also going down sharply to a certain extent. this can be explained because it is December.and in December,er,when next year starts er a lot of orders are normally.AH stopped or are are have been awarded before we see this here in November,already,and this is kind of new peak and then for December their people.stop ordering this is not for all types of products,but some products are still with a with a higher eventually with a. it was with a.confident value er because they are eventually fitting to the end of the year so er.t.嗯，好的，那那我们前面也是呃说了对吧？我们要对很多的一些这个呃基本的数据进行分析，包括它的这个生产。产品本身以及它的生产流程呃，涉及到的呃，中间的订单的这个呃，不同的分析对吧，包括我的物料流，我的这个呃，我的整个的传呃，运输呃，物流对吧，包括我的这个员工的一个分析。还有我的整个的这个啊，包括我的费用组织结构，我的整个的这个呃，这个基础建设设施和我的这个日常的运营的一些费用，那首先我们来看啊，这个都是我们一点一点。点要给大家展开的，包括一会儿的一些呃小的一些案例和计算等等，那我们首先来看呃这个。呃，进来的订单对吧？我们可以看到这儿的订单，我把它分为了这个不同的，这是根据真实的案例啊，我们来把它做了一个图表，就是它嗯。在嗯，一年的不同的月份对吧？然后呢？它有不同的这个呃产品的组对吧？我们把它分为不同的产品的类型，那它的这个呃。每个不同的产品呢，它的这个呃在每年的不同的年呃月份呢，它的订单量也是高高低低的，对吧？我们看到最呃厉害的最高的一个pick。是这个呃呃，这个product group d对吧？它的这个呃d产品，它是在呃九月份的时候有呃这个40个订单对吧？那也有非常低估的，那比如说像。这个红色的，它这这个紫色的，这个a它就完全没有订单，那这样子呢，我们要首先根据历史数据，客户的历史数据去给他分析呃客呃，这个订单的种类和数量对吧，包括订单的一个分配。情况它的平均的需求，最高的需求总的订单数量对吧？以及这个差异化，标准化的产品，包括呢，随着时间的推移，收到订单的不同。那这个呢？我们都要进行分析，然后呢？才能根据客户他的这个历史的订单数据去给他做一个后面的这个合理的项目规划。t.好的，那我们呃，这个今天就先到这儿，然后呃下节课再来给大家讲具体的如何来呃进行这个订单的分析的一些方法OK，拜拜。拜拜，it's my evening。呀，来不来？现在已经来了呀。拜拜，还有跟他说一下呢。e2，thank you。thank you。thank you tc。呃，我。