ANNALISA WEIGEL: Let's move on to our next module of the day, which called People: The Heart of Lean. What people who have studied Lean and the Toyota production system in general have found is that there's two major aspects of these kinds of systems. One is this kind of just-in-time production that we typically see, and which we talked about in the new balance plant tour. But the second and equally important component of these kinds of systems is the respect-for-human system that exists. And you heard, again in our new balance plant tour you heard Claudio talk about the immense respect that they have for their employees and how employee involvement is valued and encouraged in his organization.

Now the trouble is for a lot of folks, and engineers in particular, is we think about the people part to the problem and we sometimes sees these as really challenging. And this is a quote from a gentleman at Northrop Grumman who's fairly high in their management, and he sums it up very nicely by saying "the soft stuff is the hard stuff." The soft stuff, which is usually thought of as the people issues, is often seen as some of the hardest challenges in an organization. He's very true. But it's one of those important items to work on when you think about making an organization lean.

So in this section on people we want to have you achieve the following three learning objectives. The first is to be able to explain why people are key to improving productivity and organization. The second is to make you realize that effective communication, shared goals, and knowledge, and mutual respect lead to improved organizational performance. And third, we'd like you to be able to participate as a member of a team in order to achieve a productive and positive outcome.

So to get us kicked off on this discussion, I'd like you to think and reflect on the most important things that contribute to your job satisfaction. So whether you're a student or whether you're currently working, think about what it is that makes you very satisfied with your job. And I'd like to ask for some volunteers to tell me first of all, what's the most important thing? Let's start off with that. I'm going to start to make a list on the board.

AUDIENCE: Maybe feeling like you've made a difference at the end of the day. Whether it be to the customers or to the staff that you work with.

ANNALISA WEIGEL: What else? Yes.

AUDIENCE: Felt like I've learned something. OK, I've going to put something up.

ANNALISA WEIGEL: Learning. Great.

AUDIENCE: Having control over the outcomes you're responsible for.

ANNALISA WEIGEL: Yes.

AUDIENCE: I'd say having room for creativity.

ANNALISA WEIGEL: Creativity. In the back.

AUDIENCE: Feeling respected or valued.

ANNALISA WEIGEL: What else? Yes.

AUDIENCE: Making connections with individuals and the community at large.

ANNALISA WEIGEL: Connection. So it's the relationships with your co-workers, customers, everybody?

AUDIENCE: Yeah, with my patients and med students that I work with, but also connecting with the needs of the community in general. I guess with my colleagues, too. Though that seems secondary.

ANNALISA WEIGEL: What else? Yes?

AUDIENCE: Acknowledgement of a job well done.

ANNALISA WEIGEL: Yes?

AUDIENCE: I think a job you can work to your full potential.

ANNALISA WEIGEL: OK. Anything else?

AUDIENCE: Responsibility.

ANNALISA WEIGEL: OK. In the back. Yes.

AUDIENCE: I don't require that, but the financial incentives.

ANNALISA WEIGEL: Financial incentive, salary?

AUDIENCE: Yeah. Make money.

ANNALISA WEIGEL: Let's call that what it is. Salary. Great. We've all got to eat. Go ahead.

AUDIENCE: Having the time to do my job right the first time and feeling like I didn't wallow away in errors throughout the day.

ANNALISA WEIGEL: So adequate time. What else?

AUDIENCE: Working hours.

ANNALISA WEIGEL: Your hours. So take a look at the list we have here. And think if the most important thing that contributes to your own job satisfaction isn't on this list, and you'd like to raise your hand and tell us about it, that'll be great. we'll add it to the list. Otherwise we might start to winnow it down.

AUDIENCE: Lack of stress.

ANNALISA WEIGEL: Stress free environment.

AUDIENCE: Or reduced stress.

ANNALISA WEIGEL: OK, so low stress. Reduced stress. Susan?

AUDIENCE: Being part of a team.

ANNALISA WEIGEL: Yes, in back.

AUDIENCE: It's sort of related to hours, but work-family balance.

ANNALISA WEIGEL: Yes.

AUDIENCE: Feedback.

ANNALISA WEIGEL: Feedback from your supervisor? OK. Great. Do we have any-- one more burning last suggestion? Matteis?

AUDIENCE: Environment. Working environment.

ANNALISA WEIGEL: OK, so take a read through these and what I'd like to ask you to do now is each person take a voting strip of dots they should be distributed on your table. What I'll ask you to do is just come up to the board and place one dot next to each of your top three items. So you get to vote for 3 as the most important things that contribute to your job satisfaction. So when you're ready, just head up to the board and place your dots on the line. And, yes, you do have to vote for three separate items. You can't put all your three dots on one particular row. So go ahead when you're ready just come up.

[SIDE CONVERSATIONS]

ANNALISA WEIGEL: Has everybody had a chance to vote? Very good. All right, let's see where our top vote getters were. So it looks like work-family balance is up there, as is making a difference. Let's see.

So looks like salary gets up there, too as our top three. Excellent, so I think it's making a difference by quite a few lengths there, work family balance, and then salary.

So let's see how some of your answers as a class compared to some studies that have been done. And this is just one sample that's actually been done by Boeing. It's some of their employee satisfaction surveys. And what you see here on the chart is-- the x-axis here and the placement of these items shows the correlation or the strength of association with a high performance work environment. Really, the things that are making employees perform really well. And you'll see things like encouraged to come up with new and better ways to do things, involving them in decisions, improving my skills or learning as we called it here in class, conditions allow me to be productive. We also talked about that. Someone made that suggestion.

These are all things that have a much higher correlation with having high performance work environment than things on this side. And notice pay is sort of farthest from people's job satisfaction. So it just really goes to show you it's not just what you pay people and then job security. But it's a lot of these other important satisfaction items that contributes to people really doing a productive job.

Now there are several different theories about how workers are productive. They relate to the brainstorming that we've been doing. The first is usually called Theory X and it was one of the original management theories and it's based on the premise that workers don't like to work so they must be made to work. So you have to enforce harsh rules and lots of motivation to get them to overcome this general human desire to not work. Yes?

AUDIENCE: I have a thought. As you got salary and paid, I think why this one might be a bit different is because on the average, I guess that the bulk of the workers are already paid good enough to take care of themselves and their families and all of that. So if you're paying someone a salary that is not able to take care of himself, or not able to pay his bills, I don't think it won't be an issue. I think that this might not be a very good example, because if we look at the average pay and the lowest pay they get, it might be something very tangible.

ANNALISA WEIGEL: Sure. And I think I would agree with you. That's a function of some base level of pay. And perhaps one of the reasons why salary sometimes shows up in this environment is more important than on some of these other surveys that have been done is because we have a number of students in the room, right. Raise your hand if you're a student. If you're not being paid much of anything. And hence, if salary is really important to you.

But as you suggest, when you go out in the workforce and you are earning a salary and putting food on the table is not as concerning for you as it might be when you're not getting salary as a student, some of these other items really become important. So after a while if you're trying to create a high performing work organization, it's not so much increasing people's pay as it is focusing on making sure there are all of these other conditions. And sometimes people think it's easier to just pay people more and that doing this is harder but it pays off much higher.

All right, so back to our worker theories, which comes into play a bit with your comment as well. So we started at early management theory with Theory X. So then to counter that after a little while of experimenting with it they really came upon Theory Y, which is reflected in Elton Mayo's work. Where they said, no, actually workers-- if you just make them happy then they're going to be really productive. So this theory out of that was born the whole focus on human resources and human relations in the workplace and trying to create a happy workplace.

So that was about 1920, and then around the turn of this century, we have expressed by Dick Kleine at John Deere, his thought is that a productive worker is a happy worker. So we've got these three different competing theories. Of those three, which do you think most aligns with a Lean way of thinking? How many people think it's the first theory, Theory X? How many people think it's the middle one? How many people think it's the last one? Very good. That's the way we think, too. We think that Dick Kleine's thought about a productive worker being happy worker really is the way that things are.

And to try to illustrate some of the links between employee productivity and company performance, we want to take a case study here on Southwest Airlines. And just to give you some brief background on Southwest as a company and put them in context, they are one of the best-- well they really are the best performance of the major US domestic airlines. And you can see their profitability metric here on the chart. Southwest is in blue, which is far above the red, which is an aggregate of all the major domestic airlines and their profitability over the past couple of decades.

And in addition, Southwest has made an operating profit every year for over 30 years. Now this is a big achievement for an airline. No one else has this record and many, many times, many years, many airlines are at a net loss. A few more items about Southwest, they are one of the safest airlines around. They did have a very homogeneous fleet until they merged with AirTran, and that simplifies some of their training and maintenance and logistics items. They have never laid off any employees even after the events of 9/11.

They are the most highly unionized US airline, even though there's some perceptions out there that there's no unions on Southwest. Because, after all, those Southwest employees are so happy and the company is doing so good surely they don't have unions. That's not true at all. They're highly unionized they have a point-to-point, which is different than a hub-and-spoke route structure. And many of the other airlines in the US operate on a hub-and-spoke route structure. You can think of it a little bit more like a batch and cue and continuous flow. A little bit different.

They consistently offer some of the lowest fares that are around. They're liked by investors and employees and customers, I should say. And so you might ask what makes Southwest so successful in its business. And Professor Jody Hoffer Gittell in her book *The Southwest Airlines Way* which resulted out of her PhD work here at MIT, she argues it's because of Southwest's organizational competency. And it's characterized by shared goals, shared knowledge, and mutual respect. And she calls these three things relational coordination. And she says that shared goals helps the employees to align and prioritize the organization's success over doing their job or succeeding at just their job.

The second item of relational coordination is this element of shared knowledge. So if everybody has the same kind of knowledge, then you have visibility of the overall work process and not just your little part on it. So you can help see the linkages between what you're doing and what someone else is doing and be able to create overall a more efficient and effective system.

And lastly, this third element of relational coordination is mutual respect. And that helps to reduce some of the barriers between employee groups and helps them cooperate more effectively to get the job done. And all these three elements of relational coordination really couldn't happen if it weren't for the underlying practice of effective communication.

This effective communication is particularly one where people are communicating about the problem itself and not really worried about assigning blame when something bad goes wrong. So if you think in your own work environment, you may be able to think about some people that you interact with perhaps who are very good at thinking just about the problem and trying to separate the people out from it. And then you may also know some people who tend to focus more on blaming somebody when something goes wrong and not really focusing on what went wrong and how we can fix it. But really who might be responsible for it. That's not as effective communication as we could be.

Other elements of what makes communication effective? Frequent, timely, open, honest. Very, very simple description. Not as easy to achieve, but very simple to try to understand.

Now when an organization has very high relational coordination, professor Hoffer Gittell found that high levels of relational coordination do correlate with performance for the airlines that she's studied. And this graph shows you some composite measure of airline performance.

On the x, she took many different things into account, including on time departures, fewer lost bags, things like that. And then she has relational coordination as measured by another amalgam of a bunch of different measures that she created in her research. And each of these dots is a number of different airlines in different locations around the country. There are two here shown from Southwest and the others are for three other different airlines.

But you see the general trend. As we increase relational coordination we tend to see the aggregate performance increase. So we've seen how relational coordination works and increases performance in airlines, but you can apply this concept well beyond the domain of airlines. And it really applies, she says, in any setting where there is task interdependence. So there may be hand-offs that take place requiring feedback and iterations. Or where there is uncertainty and there has to be continual adjustment of plans and updating. Or where there are time constraints, and so you can't just wait while you try to fix a problem.

Now I want you to think about what you think of when your careers are going to unfold and the kinds of industries you all anticipate being in, and tell me if you think you are ever going to spend your time in an organization that does not have one or more of these elements in it. I suspect not. I suspect you're all going to find yourself in organizations where these are critical elements. And so this notion of relational coordination is one that would translate equally well into any environment where these items exist.

So one example is health care, obviously. Another one that we talk about is product development. Product development is done by different kinds of engineers, typically. Lots of hand-offs. Lots of uncertainties. Lots of time constraints. And I'm sure that you can think of many other situations. Any come to mind? Yes, Fabrice.

AUDIENCE: Government programs. Where the government invests in an industry to develop something and all of the sudden you have said, and then everybody has something different.

ANNALISA WEIGEL: Excellent. Yeah. Great example. There's lots of different products being developed under those circumstances.

All right well let's look at one particular example translating relational coordination into another particular environment. Professor Hoffer Gittell then went and said, well let me see if this really does translate into other environments. And so she went and studied health care environments to see if these same elements of relational coordination correlated with elements of performance. And just as you saw with the airline chart, the same kind of pattern starts to appear in the health care industry here.

So it's not only do we suspect that this notion of relational coordination translates. We actually have yet another study in another domain, which does show that we see increased levels of performance with increased instances of relational coordination.

So in order to achieve relational coordination, professor Hoffer Gittell looked at various practices that were in place at Southwest Airlines. And she identified and codified 10 different ones that underlied being able to create an environment where there was good relational coordination, which then led to having very good performance outcomes. And you can read them here. There in your notes.

Lead with credibility and caring. Hire and training for relational competence, and not just for other factors. Bridging the work-family divide. Recognizing that that's something important for employees. Measuring performance broadly. Making unions your partners. Building relationships with your suppliers. Keeping jobs flexible at the boundaries. In addition, creating boundaries spanners who are crossing different parts of the organization. Using conflicts to build relationships and to learn and grow. And investing in front line leadership. That's not the leadership at the C-suite of the organization, but those who are right on the front lines of, for Southwest, maintaining your planes, manning the gates and interacting with customers and so on.

And then the outcomes that professor Hoffer Gittell found relational coordination leads to is higher reliability. This was judged for airlines by better on time performance and fewer lost bags. As well as greater customer satisfaction and shorter turnaround time, which is really important in an industry like air transportation, where you have very expensive capital assets. And the more time they're used, the greater return you're getting on them, and the more time they sit idle at the gate while they're waiting to be cleaned and you're offloading and onloading passengers, it's not generating any revenue for the organization.

To turn to an example from health care, this reflects back on that chart that I showed you two slides ago with the coordination between relational coordination and performance. It hypothesizes that if we were able to make a 100% improvement in various work practices that underlie relational coordination in hospitals-- so if we were to double our measure of relational coordination our improvement in these work practices-- we would have an almost 50% increase in relational coordination, which would then lead to significant increases in patient satisfaction and decreases in the length of stay. Which are all very good things because these are what hospitals and health care settings tend to measure, right health care folks? You're probably measured on those.

It's also interesting to me to note that, well, just because we increase our relational coordination doesn't necessarily mean we're going to increase people's freedom from pain or their mobility. This is a joint unit that was studied in this particular focus area. Because these are really more related to the types of treatment that you're giving, but these are elements that are really being measured in the hospital setting.

So just to conclude our discussion about Southwest and the power of workforce productivity, some of the benefits that you see, we've got bigger revenues that are generated from not only satisfied customers but better utilized capital assets here. And we have reduced costs from lower employee turnover. If they're productive and satisfied and not having people sit idle. Wasted human resources. It's a very bad thing. And lastly, increased productivity leads to happy, satisfied employees, which leads to more increased productivity, which leads to more happy, satisfied employees. A very virtuous circle.

So now we'd like to turn from our case example of Southwest and linking employee satisfaction, essentially, and productivity to now talking about working in teams and thinking about how teams can better work together. And to start that off we want to do some active learning. We're going to have a class debate.

So the objective here is you're going to have a time constraint, and you're going to have to articulate a clear and concise message on one side of the debate or the other. That's your overall objective.

But while you're doing that, we want you to observe a couple of things about the team dynamics. We want you to think about how differing viewpoints in your team affect their work. We want you think about the processes used for your group decision making. And lastly, we want you to think about how completing the task depends upon the personal feelings of your group and the process.

So there's two things you're doing. One is you're making this argument. And two, you're stepping back and observing the whole process while it happens and taking notes on both of those.

All right so here is our debate. So the early bird may get the worm, but it's a second mouse that gets the cheese. So the birds proposition here in this debate, putting it in a Lean context, early adopters of lean thinking gain the greatest competitive advantage. But then there's another side of the debate that goes something like this. That the second followers, people who are not the first, the second followers of lean thinking gain the greatest competitive advantage. So either of those points could be true. And we're going to assign the tables to be various points of view. And you're going to have to argue for one of these two different propositions.

So I'm going to go and assign tables. I'm actually going to make you birds. Mice. Birds. Mice. And birds in the back. And what do you have to do, is I'm going to give you eight minutes to work on formulating a 60 second or less argument in support of the proposition you've been assigned. And you also then have to come up with a 30 second or less rebuttal. Because the format is going to go you get to make your point. The birds make their point, then the mice make their point, then the birds get to rebut, and then the mice get to rebut.

So you have to write two things. Your proposition and then your rebuttal. And they can take no more than 60 seconds. And you have eight minutes in which to formulate both. And then we're going to have each team do one or the other. You won't know which until we get time and then we'll kind of roll dice and see who gets assigned what.

All right, any questions about the task asked of you? All right, great. Go to it. I'll give you eight minutes on the clock.

All right, time's up. So now everybody's got their proposal or proposition and their rebuttal formulated. So we're going to have each. The birds and the mice are going to give their proposals and then we're going to hear the rebuttals. And since I don't have the right number of dice to roll for each of situations, I'm just going to pick. So I'm going to ask this table, you guys are birds? OK. I'm going to ask you to do your proposition. And you are birds in the back, too? I'll ask you to do your proposition. So we'll hear same thing from both teams. And I'll ask remainder birds that you guys do the rebuttal.

And then I'll ask this team over here, mice? I'll ask you to do the proposition, and I'll ask this mouse team to do the rebuttal. All right. So let's have the birds go first. So we'll hear the two bird propositions. Go ahead. And I've got you on the clock.

AUDIENCE: So, we think it's a good idea to start early because it's a continuous process, and takes time to implement and to change your company's culture. So we're talking about five years earlier. So the sooner you get started, the sooner you can realize your gains. You can use creativity to create the standard before other people really define it for you. If you start early and you find you run into some challenges, then you have time to go back and change things and make it more efficient or choose a different path. You can establish a reputation as being innovative, which will not only encourage people to invest in your company but may also excite your employees. Because they'll just be excited about being on the leading edge of something. And then it takes time to change the culture of a company, so that's also a good advantage of starting early.

ANNALISA WEIGEL: OK. And just a few sentences to spare. Good job. Let's have the other proposition for birds. And please speak up so everybody can hear you.

AUDIENCE: Well, I'm going to start with the graph that we have here. So this is time, and this is productivity. And if you start with this company right here, which would be the early bird adopting Lean and they improve their productivity and their employee satisfaction and their efficiency, there is virtually no way that this second company that starts at a later time can ever catch up to it. And while they start their innovations, we're moving on to our next innovations after we've already established some brand loyalty and got customer allegiance. We've had the market edge. At some point, the market gets saturated and we've already reached it, like this graph shows you.

The same thing that our colleagues were saying is that because it takes five years and it's not just an end street. If we have ongoing continuous improvement, that it's something that continues moving on indefinitely in the future. In our patients, we have better recruitment and retention of satisfied employees. Our end product is better and we can respond to customer's needs--

ANNALISA WEIGEL: Times up.

AUDIENCE: --quickly.

ANNALISA WEIGEL: OK. Thank you. All right let's go to our mice.

AUDIENCE: So, the first to make it work in a sense of the risk of failure and squander time and resources. Once a plan has been implemented that is advantageous, you see that the stated inefficiencies of that process can be corrected, redrafted, and implemented. Gain a competitive advantage. Also by starting up later, the standard had already been established. And that way the implementation time is less.

ANNALISA WEIGEL: Very good. Very efficient. Much less than 60 seconds. All right, now we've heard arguments on both sides of the case. So let's hear some rebuttals. So the mice just went. So let's hear the bird's rebuttal to the mouse's proposition.

AUDIENCE: So, certainly the mice proposed that they would learn from bird's mistakes. But so much of Lean is specific to individual enterprises as it relates to local politics, the culture that enterprise has in its space that we think that it's very specific. And what we learn in, say, BI might not necessarily be directly transferable to working with medicine. It defends the bird. And our second point is that by not being an early adopter, you're kind of adding some more time. You're kind of just sitting around and waiting and existing in a culture of efficiency that is doing harm to health care patients, potentially. And that's just unacceptable when you know that there is better ways of operating on the daily.

ANNALISA WEIGEL: Very good. No pun intended. All right, let's hear the rebuttal to the mouse's proposition.

AUDIENCE: So for the mice, it's better to be the second adapter because you have an easier time getting buy in. And that's one of the biggest hurdles, because people see how it's worked in other industries, other companies, so they say, Oh, we can do this. You can also pick and choose what you want and what you think will work best for your specific situation. You also have more experts to learn from because you can tap into the resources and the knowledge of the other companies and see what failed. And it's always the first time that takes the most. And then you're starting from a higher point so you can more easily reach and even surpass the point of the birds.

AUDIENCE: And just to add to that, they shared with us a graph showing production. Today we learned that the US auto industry compared to the Japan auto industry. As 1947, Japan

[LOUD LAUGHTER]

AUDIENCE: In the space of about 40 years, they have way overtaken the US industry. So this is a clear example that there's always room to overtake.

ANNALISA WEIGEL: All right, and that's actually your 60 seconds. OK. Very good. Excellent. So I'm glad that this has inspired some fires in you. So now that you've heard both sides of the argument, I actually would like you to step aside from your team propositions regardless of what you're asked to argue for your teams and I want you to think about the arguments and the rebuttals that you did here. And think about which side of the argument seemed more convincing to you personally. So if you could take out your green cards and your yellow cards, I'd like you to think if you really believe the bird argument or the mouse argument. So if you feel you believe the bird argument, raise up a green card. And if you feel you believe the mouse argument, raise up the yellow card.

Go ahead raise it up. We just want to get a sense of the room.

[LAUGHTER]

ANNALISA WEIGEL: Do we have everybody making a decision? Somebody lost the green cards. All right, so it looks like-- look around. We've got more green cards than yellow cards. But still, we got maybe 4 to 1 green to yellow. So it seems like overall you all feel that the bird argument, the early adopters of Lean, have the greatest competitive advantage. And there's no right and wrong to this, and it's largely dependent on your context and situation and there may be circumstances where it's better for an organization to wait.

The organization is, say, in the middle of big transition to a new product. That just might not be the right time to start. It may not be advantageous for them to think about being an early adopter. But there are certainly are lots of advantages for an organization who's ready to adopt Lean to adopt it. So you might say that if you're ready, if you're able, if it's a good time and if you don't adopt Lean, that's not so good. Right? But necessarily being an early adopter doesn't have to help you but it certainly can be a very good thing for an organization.

So now let's turn from thinking about the outcome of this debate and whether you thought about yourself as a bird or a mouse. Let's think about the team experience itself, which was the other element I asked you to reflect upon as you're going through this exercise.

So think about this common dilemma that we find ourselves in when we're working in teams of your personal views versus the team views. Think about your exercise here, was there adapting that you did or was there compromising you saw taking place in the team? How were the personal feelings, attitudes, and perceptions of others handled? How did you feel was handled for you? Did you feel anybody else maybe being uncomfortable in that situation? What about the wordings of statements? Did you, as a team, argue about how you worded things? Did that make a difference? What was the process used for your group to decide and discuss and present? Was there a process? Did you think about it? How did it unfold? And how satisfied were you with the team outcome?

And I'd like to take maybe three minutes for each group to discuss it within their group. And then we'll take one or two minutes to kind of give some open commentary on these issues as you discuss them in your group.

If I can have everybody's attention, please. We'll get back to sharing our discussions with the class so we can all benefit from the table discussions. Table discussions are a great way to get more people talking at once. So if we just had a class discussion, we would get one fifth the kind of conversation that we get going on with all the tables. So now I'd like to hear though, about some of the richness of the conversations you had.

So first on items of the dilemma of the personal versus team views. Which tables felt that they experienced some of those things? Yes?

AUDIENCE: Well at the start, I sort of had a different opinion from the rest of the team. Because we were assigned to a particular side of the coin. We just had to work together. We didn't-- ten seconds I was convinced I was in the group.

ANNALISA WEIGEL: Tory?

AUDIENCE: I think we came to a very similar conclusion of saying had it been maybe a topic like politics, where everybody has a view but you're just meeting people and you want to be respectful of other people. So you might have had a little more conflict. Whereas here, since we were given our conclusion, everyone was just trying to quickly find ways to support that conclusion together.

ANNALISA WEIGEL: And this table over here? Where you guys had an even split of yellows and greens in your personal votes?

AUDIENCE: No.

AUDIENCE: We were all yellow.

[LAUGHTER]

AUDIENCE: We worked so well together that we were actually, truly, convinced.

ANNALISA WEIGEL: Excellent. Let's talk about the process that you used. We just had a big lecture on process before this, right? And seeing life as a process. What process did you use?

AUDIENCE: We had a good process. I mean, everyone had to give their opinion initially. We had input from everyone before coming to a consensus. So it wasn't like someone just came up with the final solution. I mean, we have to listen to everybody's point of view. And maybe because our group is small, maybe it was more effective, we were able to come to a very quick conclusion based on different input from everyone.

ANNALISA WEIGEL: Other reflections on process?

AUDIENCE: I guess it was not explicitly delineated, but we split up our time into three different sections. One was just anyone who just chimed in with their own answer supporting the case. Two was looking and anticipating rebuttals, and three was just writing it all down.

ANNALISA WEIGEL: Excellent. And did you come up with a written statement?

AUDIENCE: Yeah, we did.

ANNALISA WEIGEL: Excellent.

[CLASS TWITTERING]

ANNALISA WEIGEL: How about your satisfaction with the team outcomes. Anybody unsatisfied or satisfied with the team outcome? I'm going to hazard a guess on balance. People seemed satisfied because there wasn't a lot of storming out of the room and yelling and shouting. But, if you had any complaints however small about your team outcomes. If you wanted to voice that.

AUDIENCE: Don't get me wrong. We were mice, but by the time we were done, we were all pretty much agreed on the bird view.

AUDIENCE: I think we started out with the bird view. We forced ourselves to go to our mice view, and then we came back to bird view.

AUDIENCE: Because as soon as we started talking about a rebuttal we realized, yeah.

ANNALISA WEIGEL:	Which is why good debate teams work on their rebuttals a lot. OK so let's use this exercise then to jump off into our last segment of slides here in our people module focusing on team elements and team skills. And this chart is our transition to just remind us how people are the heart of Lean. Because we have the tasks, which are what the people are doing. And you all just had a task in your exercise. The processes are how people are doing their tasks. And we talked about what your process may or may not have been. But it's all about the people. The people are doing the tasks. The people are doing the process. And they set within various organization structures that are what enable them to do their processes and tasks. And that's all embedded in a particular organization's culture, which has attributes about it that further influence and enable a person's ability to do their tasks and processes.
	Many of the work that people do are in teams and they're collaborating. And there's really three elements of collaboration. There's not just the thing you're doing, but there's how you're doing it and then there's this thing we call affect, which is the feelings about the work. And this is what the people bring to. And it's based on your prior experiences. It's based on the culture that you sit in, organizational, national, ethnic, et cetera, on your own biases that you bring to what you're doing. And it's also based on your current experience and where you are. And it's both the process as well as the feelings or the affect that are supporting the task actually getting done.
	When you're collaborating in teams, and you're bringing all these elements together of process, task, and affect. There's a lot of benefits to collaboration. You get-- I think most of you would recognize these-- you get more ideas, new ideas, multiple areas of expertise to bring to bear on the problem. Work is shared. It should result in some stronger problem solving abilities and should improve things like design work and other kind of creative tasks.
	But there's also a lot of challenges that are involved in collaborating with teams. And I'm sure you've all run into some of those over the course of your school and work time. So what are some of the challenges you run into when you're trying to collaborate?
AUDIENCE:	The workload isn't shared evenly.
ANNALISA WEIGEL:	Not shared evenly in a workload. What else?
AUDIENCE:	I think diversity can bring new ideas. But if our group size was larger, I mean, it's hard to accommodate everyone's ideas. So somebody might view that, oh my ideas didn't get into the process.
ANNALISA WEIGEL:	So it can be inefficient and unwieldy?
AUDIENCE:	Yeah.
AUDIENCE:	It takes time to develop a consensus in a big team.
ANNALISA WEIGEL:	More time consuming. Yes.

AUDIENCE: We were talking about how as we go in, the people that we're working with may not be skilled. May not know how to work in this sort of model. That they're used to just being told what to do. I see that on a micro level with patients, but also if you try and ask your staff to be more of a contributor, and be more responsible and also take on more credit, they may be like, what are you talking about? I punch in, I punch out. I'm not a member in that way. So you have to retrain them.

ANNALISA WEIGEL: People just may not have the skills to collaborate in teams that they need. Either by training or just by expectations.

These are some of the common challenges. I'll just list for you on the rest of the slide ones that we think are prominent as well. Different goals and values. We just talked about not being skilled in it or practiced in it. Sometimes you run into ego issues and people are defensive about their particular work or their ideas. Their preconceived notions that get in the way of teamwork. And then there's differing work styles that you try to bring together in a team and that can be counterproductive to your efficiency. Or maybe somebody worked in a bad team situation before and that's just really hindering their ability to work together productively in future teams.

So then, with all these challenges how do you meet them? What are some of your thoughts?

AUDIENCE: I think setting out ahead of time what the expectations of teamwork are, and just kind of lay out for people how do you work with a team? Like respect others. Listen first, speak later. Things like that.

ANNALISA WEIGEL: Excellent. So clear rules and education.

AUDIENCE: I think shared knowledge and shared goals can add a lot to the relational coordination, because this is how you share your goals with others and try to convince them to come to the same conclusion. Otherwise, I mean, everyone feels that I had my own ideas.

AUDIENCE: Something important. The diagrams you always show about collaboration, is always-- the puzzle pieces always fit perfectly, which I think is a misrepresentation. You have to accept that puzzle pieces won't fit perfectly, and there's someone who's going to make a decision in the end. And if there is a culture of mutual respect, the person making the decision will respect the people that brought in suggestions and vice versa and that's just the nature of life.

ANNALISA WEIGEL: Establishing that expectation is important.

AUDIENCE: Things like ongoing training and starting off with something small that you can have an obvious, tangible result with guaranteed success. So that they can learn the process and feel good about it. And then keep continuously doing ongoing training over time to improve their ability to do it and remind them.

ANNALISA WEIGEL: Excellent. Again really excellent ideas. Let me spell out some others, some that are duplicate of what we just discussed and some which are new. So long the lines are trying to make it explicit and trying to train people and set expectations, you may want to try to do those also in writing and not just verbally. Sometimes seeing things in writing can really help people understand what's going on. Considering alternate ideas or solutions and not jumping to consensus prematurely can be one way to meet the challenges of collaboration. Paying careful attention to process is really important. If people understand the process is very clear and very fair, then when they express opinions that are counter to what the rest of the group does want to do, and the group goes in a different direction, at least that person has felt that they've had their due process and they haven't been short changed.

The next point voicing disagreements constructively, directly, and explicitly is really important. Because you're not all going to agree except for certain groups in this particular exercise, where you've all coalesced on a certain point. But in your work environments, you are going to have times when you disagree. And learning how to do that productively. So that you're focusing just on the disagreement not on the person that you're having that disagreement with will help you get to a solution more productively.

Lastly, give positive feedback directly and explicitly too. So how many times a day do you say to a colleague, that was a great job. And then think of how many times you make critical comments about a peer's or colleague's work or suggestions for improvement. Especially at MIT, we have a reputation for being a praise free zone here. Lots of criticism. It's very important that you also reinforce the positives in collaboration, because that's going to foster the team being able to work productively together.

Now in organizations, you're going to find many entities are organized in teams of various sorts. And this diagram helps orient you to some of the previous as well as current structures that we find in a lot of the complex engineering system kinds of industries. Usually, the organization is broken down functionally. There may be a design function, there may be an operations function, there may be a maintenance function. Or it may be a structure function, a thermal function, and so on.

And it used to be that groups worked independently, and whenever you had yo collaborate somehow between, say, function one and function two, the interface took place between the top people. But it was usually the folks down here who were doing all the work and needed the answers from these people. But they had to work all the way up through their bosses to communicate with that person's boss to work all the way down through the chain. So that's kind of the old style, the way organizations worked.

And then a couple decades ago, we introduced the concept of integrated product and process teams, which really took essentially the folks doing the work down here and put them into a team so the communication could happen directly between people who were doing the tasks and not really up and down a chain of communications. There, it really didn't matter that this person knew what the question was that they're asking had to be passed along. They're just relaying it. It's much better if you can have direct interaction between people.

So this kind of an organization structure has helped increase the effective communications and the ability for teams to work together in these complex enterprises that we see today. But being on an IPT or an IPPT, you're now asking people who are in this part of the organization to have teamwork and leadership skills that they might not have needed to have in our old kind of organization where the leadership was largely done at the top. So this helps us understand why introducing the concepts of teamwork and leadership and developing skills around those is really important to do really from day one. When you join an organization and not waiting until you get to be at the top of that org chart.

Now teams progress through a number of different stages. And there is a lot of literature about this, but in essence when you first start out with a team there's a lot of challenges we just discussed and working together. And teams take a little while to grow from beginning teams to what we'd really call high performance ones. And the degree of management necessary for those decreases over time as we get towards a more high performing team. And their empowerment and ability to do things increases as well.

We find that when we look at high performing teams in a Lean environment, they have these attributes about them. And we've mentioned most of them so far. They have mutual respect for all people and all jobs. They encourage contribution by all the team members. We heard Claudio talk about that in our tour today. Different opinions are not only valued but they're sought after and brought out. There is open and honest communication and feedback. The goals of the team are aligned. There is continuous improvement of both the individuals and the team. Always seeking to do a better job. And there is a high degree of synergy and cooperation among the members.

So if you're striving to put together a team that is high performing, you're really trying to work on these seven particular attributes and try and increase those for your team.

So lastly we'll just conclude with our chart here. People are the heart of Lean. With our shared goals, our shared knowledge, mutual respect, communication, teamwork, and leadership. All the hallmarks of a high performing Lean team. And by way of summary from what you've just heard over the past module on people, I'd like you to take out one of your white index cards and take out a pen and write down for us what's the most important thing you learned from this module on people. And on your way out to the break, you can drop that on the back desk so we can take a look.