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*Implementing Lean Marketing Systems*



## **An Introduction in ASR**

**– Actively Synchronized Replenishment**

Guest was Carol Ptak



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## Implementing Lean Marketing Systems

Carol Ptak is a Visiting Professor and Executive in residence at Pacific Lutheran University, a farmer and dog trainer. This is after years of experience in management at PeopleSoft and IBM Corp as well as many years of consulting expertise.



At PeopleSoft, she developed the concept of Demand-driven Manufacturing, as an overall product and marketing strategy to align product development, market awareness, and demand generation. Her innovative approach is credited with significantly improving the company's position in the manufacturing industry software market and earned her national recognition in publications such as CFO Magazine and the New York Times.

She co-authored a chapter with Chad Smith in the [Theory of Constraints Handbook](#) and has authored and co-authored books such as [Necessary but Not Sufficient: A Theory of Constraints Business Novel](#), [The Quantum Leap: Next Generation](#) and several others. She has been asked by McGraw-Hill and presently updating [Orlicky's Material Requirements Planning](#).

You can also purchase just this chapter: [Integrated Supply Chain \(Chapter 12 of Theory of Constraints Handbook\)](#).

ASR Website: <http://beyondMRP.com>

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**Joe Dager:** This is Joe Dager, the host of the Business901 podcast. Participating in the program today is Carol Ptak. Carol has authored five books on MRP and ERP as well as a book jointly written with Dr. Goldratt. She is a past CEO of APICS, a former VP for PeopleSoft, and former director with IBM Global Services. She is currently the Executive-in-Residence at Pacific Lutheran University.

Carol authored one of the chapters in the "[Theory of Constraints Handbook](#)" discussing supply chain and how ASR, an acronym for actively synchronized replenishment, will meet the current material synchronization challenges, a step beyond MRP.

With that mouthful, Carol, could you start us by just briefly introducing yourself and then go into maybe what ASR actually is?

**Carol Ptak:** You bet. Thank you so much. I appreciate the opportunity to talk with you today. First, I think the big thing is that we have to look and say what has changed in our environment? We all know that we're in a recession, and a lot of people have focused on the fact that the economic times right now are really bad. But what a lot of people are missing is the fact that in manufacturing and across the supply chain that the world around us has fundamentally changed.

Let's look at the software companies. I always look to the software companies as, if you will, the lightning rod to tell us what's going on in the industry, because they make their money by building applications that meet the need of the day.

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Let's look back at about 1996. The hot thing at that point in time was what was called advanced planning and scheduling systems, APS. Why did software companies build those in '96? It was because we had excess demand to the capacity that we had in manufacturing. In other words, we could sell everything that we could build.

Well, now what's happened in the last 10 years? From 1996 to 2006, what we've seen is that world has turned inside out and upside down. We had Eastern Europe that came up online in manufacturing. We had China come on in a big way. The American manufacturing system became much more efficient.

What we've seen is that now across the world we have excess capacity. When you add to that this whole advent of the Internet where when we get on the Internet, we expect to have an experience like Amazon, where I order it and it's going to tell me instantly when I'm going to get it.

If you don't provide it at the price I want to pay and the time I want to pay, then I'll just go someplace else. Why can I do that? That's because I have all this excess capacity out there.

So what companies see today is volatility like they have never had to manage before, and at the same time, they no longer have the reliability of understanding what the customers are going to demand and when they're going to demand it, because customers are increasingly fickle.

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So what we've got is we've got this, if you will, the perfect storm that's come together of excess capacity. We've got incredible product variety. Think about our product life cycles. They're getting shorter and shorter and shorter. We also have this customer craziness that's going on.

The world that we're trying to live in -- and it started about four or five years ago -- is that we can no longer afford to build unless somebody's going to buy it, which is consistent with what Dr. Goldratt's talked about with his concept of throughput.

I worked with John Constanza on the rewrite of his book called "Demand Flow," and it was the next generation. As we looked at that, we said how do we get this signal from the customer to production so that I can build as close as possible what the customer wants when they want it?

What a novel concept, right? This is what Lean has been all about is how do we make production flow? How do we identify what is the value to the customer? That's why we started to look at, and we said, OK...

When I was at PeopleSoft, we looked at this concept called demand-driven manufacturing. In fact, we coined that term there. It's funny how many people have forgotten that, but that was actually a term that was coined at PeopleSoft. As a matter of fact, I'm sitting here in my office looking at some of the original posters back when we did that.

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But in the day, we didn't have the technology...that was back before PeopleSoft was taken over by Oracle so that was back in the oh gosh, it would have been the 2002, 2003 timeframe.

So that leadership was already there back in the '03 time frame. And that's actually how I started the work with Demand Flow Technologies, the DFT guys, the JCIT guys that was founded by John Costanza and that's actually how I got into to rewriting the book, "[Quantum Leap](#)," was because of the PeopleSoft relationship. And actually, PeopleSoft at the time purchased the DFT software, built it into our, our software company. And why did we do that? Back to that lightning rod of the software companies, the software companies are going to try to deliver what the customers want. And I mean, come on, it's all about Lean. How do you do that?

So many of the Lean zealots will say, "Oh, you've succeeded in Lean we need to get rid of all the technology." Well, it's crazy. I mean what do we know? The closer you try to get to customer demand, you need technology. How do you manage it when you get outside of your four walls? How do you manage signals to suppliers and your supplier's suppliers and your customers and your customer's customers? You look at the Score model and it's a holistic view. How do you do that in a pull system when all the systems you're dealing with are push?

**Joe:** I think it's a great description. I mean I haven't heard it described that well and that concise and I think one of the problems that Lean struggles with is getting outside of their four walls.

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**Carol:** Well absolutely, because how do you do that communication? Because what have we always been taught the first question about inventory and whether you're a Lean person or a Drum, Buffer, Rope person or any of the other techniques, the first thing they ask about inventory is how much? How much inventory do I need? That question fundamentally is incorrect. The first question you should ask about inventory is where? That just usually sets people back on their heels. I had the opportunity to meet with one of the Apic certification committee heads over the weekend, last weekend, and I hit him with that concept of we're tuned to how much and the real question is, "Where?" and he looked at me and he said, "You're absolutely right," that it's "Where?"

Because when you think about it, what will the Lean zealots will tell us? "Inventory anywhere is a waste. So we need to eliminate the waste." But, what do we know? We know that in a Lean line, you can't run a Lean line more than about 70% because the cumulative variability will catch up with you and you're going to be starting and stopping the line. So you want the line to run smooth. Well then the DBR guys are saying, "Well you need to put inventory at the drum."

Then you've got the supply chain guys saying, "Well we need to have inventory out there so that when we pull inventory that it's available." Well, it all really gets down to the same question of, is "Where do we put inventory?" Then the second question is, "How much?"

**Joe:** That's what has made someone like FedEx successful. They put the entire inventory at this hub and pull from it with each spoke.

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**Carol:** Yeah, absolutely. When you think about, FedEx has the capability of doing what? Assemble to order out of Memphis and then delivering it by the next morning. Well why? They put the inventory at the hub. And why is it when we look at manufacturing we lose that concept? Because if you think about it, now I'm going to start to dive deep into the manufacturing stuff here, when we look at a bill of materials, what have we always been taught? Classic APICS education says, "You will safety stock at the finished goods level if you are a make the stock company to guard against variability of demand or if you're a make to order company you're going to safety stock at the component level, at the purchase part level to guard against variability of supply."

The reality is that if you can envision there are many bills of material out there that look like FedEx routing maps where they come into a hub. There's a common part there that we make a bunch of them and we turn them into lots of different things and all the classic education would say you would never safety stock at an intermediary part because it's a make part. What are you crazy? I know I used to teach this stuff. I was the CEO of APICS, for crying out loud, so I know what's in their courseware; I put it there.

And the thing is when you look at it, that hub, just like you said with FedEx, is exactly the right spot for the inventory to be. What?

**Joe:** But the hub is dependent upon where the usability of the part is. I mean, you could have several different hubs within your manufacturing organization.

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**Carol:** Absolutely spot-on. And that's the core behind actively synchronized replenishment is it says, well, not only is it where is the hub dependent within your four walls, but where is the hub dependent across your supply chain?

**Joe:** This is something that should be done company-wide? 20 different manufacturing facilities, you're really should have a hub for a certain part at one of these places.

**Carol:** Absolutely, what we find is that when start to ask the question of "where?" what happens is that it causes us to really look totally differently at our whole process of planning inventory. So what ends up happening very frequently is that it institutes inventory where you've never stocked it before, but it eliminates inventory where we've always kept it because that's the way we've always done it. Think of some of the challenges that we've always had in inventory. And it's "How much do I put?" and then the secondary question was always "where?" instead of the opposite way that says "Where do I put it?" and then "How much?"

So we see companies that are instituting this conceptual change. Overall, initially the inventory goes up. But when we look very quickly, in six to 12 months afterwards, not uncommon that the inventory goes down 70 to 80 percent, while, at the same time, on-time goes up dramatically. It's counterintuitive, isn't it?

**Joe:** Yeah, it is. It is.

**Carol:** Yeah. Because what we do is we sort of go, "OK, we're sort of in this push me, pull you." We want to focus on this idea of predictability. So I want to be able to forecast. And

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at the same time, I want to be able to focus on my agility, my execution. So I want to be in pure pull.

Well, what do we know? Forecasting and pure pull are at absolute opposite ends of the spectrum. So how do I do that? And that's where actively synchronized replenishment comes in is because it allows us to do both at the same time.

**Joe:** Before we get too far into ASR, I've got a couple supply-chain questions. When people are looking at pull, they're looking at it, even though it's supposed to be customer-driven, really, they pick a control point within the company. Is ASR still based on something like that?

**Carol:** It is a control point. It would be probably a different kind of a control point than what the traditional supply-chain approach would be. And again, we're always looking for that FedEx hub inside of a company. And that requires an analysis of the bills of materials to understand, where is that potential buffer that I can put in there and dynamically size, based on our forecast, but that's OK, that I can put a small investment in inventory and get a huge return on that investment?

**Joe:** That's really kind of a central thought of what Dr. Goldratt explained in, his latest book, "[Isn't It Obvious?](#)" isn't it?

**Carol:** It's partly that, but it actually goes beyond what Eli talks about. This is going to surprise you. It really goes back to what Joe Orlicky wrote about when he did the original MRP book back in the '70s. If you go back and you read the original text of Joe Orlicky,

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who wrote the bible on MRP, you will see in there an extensive discussion about replenishment. That whole replenishment discussion was taken out when George Plossl updated the book in the '80s. But what's interesting is that--or at least it's interesting to me--I was approached by McGraw-Hill, and Chad and I were asked to update Orlicky's book, and we signed a three-book deal with McGraw-Hill to take Orlicky's original book, the Plossl update, and bring in the new rules for these planning systems that allow companies to become demand-driven as they move forward. And what Chad's and my plan is we're bringing back a lot of the original text that Orlicky wrote back in the '70s. The man was absolutely a genius.

**Joe:** He's kind of like the Deming of the supply chain.

**Carol:** He is. He passed away before he actually saw the technology be capable of doing the things that he talked about back in the day. He truly was a pioneer and innovator. And he didn't understand how we were going to do it at the time, but he knew that we had to. Like I said if you back to the original text, and I still have a little orange book here, we'll see in there that he talked extensively about replenishment. That was before Goldratt ever wrote the book, "The Goal."

**Joe:** It's kind of like Jules Verne didn't understand how we were going to go that deep in the sea or that far to the Moon, but he explained how to get there, just about.

**Carol:** Absolutely and it's funny because, think about, Joe, what normally happens in Lean. There are a lot of people that say, "In Lean, you are successful in Lean if you get rid of your MRP system." How many times have you heard that?

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**Joe:** Oh, yes. You hear that fairly often.

**Carol:** On one side, you're saying, "We need to ignore MRP. You need to produce totally to demand." Right? But on the other side, you've got your purchasing guys going, "Wah! Can't do that! I've got to utilize MRP because I have to have visibility to my total requirements, because my total lead time to get parts in here is longer than what the customer's willing to wait, or what we refer to as the customer tolerance time. So that means that I have to have some visibility about, what are you going to do?" Lean is really good. I always tell my students that it's like landing airplanes at Chicago's O'Hare Airport. It's really easy to shuffle the schedule when they're up there, but you've got to have a plan to get them in the air. You can't just say, "OK, we've got a landing strip available right now. OK, take off from Seattle." Well, no, it takes five hours and 12 minutes to get from Seattle to Chicago. Now, the exact time when it's going to arrive? Hey, we all know, you never know. It could be plus-minus, what, an hour?

Exactly the second when it's going to land? You don't. So you still have to plan. So you're in this "push me, pull you" again of you have to produce to demand, and at the same time, you have to purchase long-lead parts. When you do both of those then you can truly be agile to the market.

So it sets us up in this conflict of "I'm going to ignore MRP, or I'm going to utilize MRP." And I'll have people say, "Well, we unplugged our formal system." I saw a lot of Lean guys out saying, "Oh, we're going to get rid of the systems. We don't need any stinking computer systems." Well, what they end up doing is they drive them underground, and

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what'll end up happening is your purchasing guys are using Excel spreadsheets to plan stuff. And if it walks like a duck and quacks like a duck, it's still a duck!

It's still MRP! But now you've complicated your IT landscape by pulling it into an Excel spreadsheet. Now you're created more complexity in a company, with the goal being you want to reduce waste.

**Joe:** It's interesting how replenishment is the key term. What we're really looking at and we're saying, instead of, when you think of fulfillment or supply chain, it's really zeroing in on that word "replenishment."

**Carol:** Replenishment, from the perspective that Orlicky discussed back in the '70s, so that nobody gets confused, because there's a lot of different views of replenishment, including Eli's last book, the understanding that we now have of replenishment is deeper than the "Isn't it obvious?" That's a pretty simple replenishment. What ASR does is there's a much deeper level. I just came back from the TOCICO Conference. We had quite a conversation about replenishment. Only a bunch of TOC folks "Can we sit around and talk for four or five hours about replenishment," but we can.

**Joe:** Give me the relationship between ASR and TOC because they're looking at a hub. You look at that as your constraint? Explain that relationship a little bit.

**Carol:** That's a good question, Joe. Think about what Lean and TOC--and the pull mechanism is called drum-buffer-rope--both have in common. What's the issue? Well, drum-buffer-rope activates resources when the drum, which is the constraint, works. So

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you don't release material any faster than the drum can do its work. A Lean line can only work as quickly as the whole process flows, right? Because what Lean does is it strips the inventory out such that the whole line then becomes the constraint, if you will, so that the whole thing is either running or it's out, it's done. OK?

So now, what do both have in common as an issue? How do I get the materials? How do I enable material planning in this pull environment when everything on the materials side is in a push world? That's really it.

The difference between the TOC view and the Lean view is really the same. They're both pull techniques because, when you think about it if you take TOC, the drum-buffer-rope side, the buffer is sized for the variability in the process. And what happens, when you take enough variability out of the process, drum-buffer-rope starts to look a whole lot like a pull line, a Lean line. Because that's the only reason the buffer's there is because there is some kind of volatility that is causing that line to shut down, and that's called the constraint.

**Joe:** So you're saying that, since you're living in a push world, you still have to stock that buffer, but you just have to stock...

**Carol:** Well, we're living in a pull world. That's the problem. That really is the core of the problem is we are living in a pull world.

**Carol:** So the push rules don't apply anymore. Think about the technology that we're using at every company. It's like rings on a tree. We were able to do advanced planning and scheduling because we had ERP, enterprise resource planning. We could do ERP

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because we had MRP II, manufacturing resource planning. We could do MRP II because we had closed-loop MRP. That was a huge deal, when we could put material and capacity together. When we got to MRP II, we added the financials. As I always tell my students, "Good news is it's integrated. Bad news is it's integrated."

Well, we could do closed-loop MRP because we had MRP, right? I mean, that was back in the '70s, and that was when we had to spec the software first and then we'd implement it. I love listening to people complain now. It's like, yeah, back in the old day, we had to write the spec first, write the software, and then implement it. But if you peel MRP back, it was BOMP and de-BOMP, back in the '50s. If you look back in the earliest days, the first MRP system was called a BOMP processor, was written at the Castle Company up in Rochester, New York. Dick Ling was one of the key architects. IBM was in the middle of it. And they wrote it in 8K of memory, because that's all we had.

If you peel that back even further, what's at the center of BOMP? Inventory. What was the assumption? "I'm going to have this inventory everywhere." It's an inventory-driven system.

Well, if you think about the fact that we now have more market volatility, we have excess capacity, and we've got these crazy, fickle customers, and our product variety has gone skyrocketing crazy, what's at the center of all of our approaches today, all of our business rules today, demand? The current systems, we're all fighting. Whether you're Lean or you're TOC, everybody's fighting their systems, because the two underlying cores are very, very different.

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**Joe:** I have to agree with you, in theory. But the difficulty is--let's go back to the hub. You're still basing your hub on a forecast, a guesstimate?

**Carol:** Absolutely. But, if I'm going to put a hub based on a forecast, and then I'm going to monitor it based on a green-yellow-red replenishment level, what we find is that the amount of inventory I carry is significantly less because my first question was "Where do I put my inventory?" instead of "How much?"

**Joe:** So you're saying, since you're pulling from the hub, that the pull is spoked out to so many different sources that you have the ability to react quickly, have a significant amount, monitor that, and that makes that pull demand work.

**Carol:** You bet. Think about a break wall in a marina. You and I were talking about the ocean earlier. Where I used to live, I lived right on the ocean, but where we lived was on Puget Sound. Puget Sound is a very protected body of salt water out here in Washington State. The break walls we have in a marina, in other words, to protect all of the hundreds and hundreds of very expensive boats in the marina in Puget Sound, they're very, very small. Well why? Because, our waves don't get that tall. Now as I go out to the ocean where we've got the big waves coming in, I mean the winter storms out here are just incredible, those break walls, it's not uncommon to be fifty, sixty, seventy feet tall. Well, back to the volatility that a company sees. I need a break wall, but the more reliable my demand patterns are, smaller the break wall, the less reliable, the bigger my break wall, but I only need one break wall to protect.

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And that's what we see is that when we discover where to put the inventory, it protects hundreds and hundreds and hundreds of boats. As opposed to the old days what we would do is that it would have changed the docks, it would have caused the docks for each position where each boat was moored up rather than putting in one break wall. And that's the difference.

**Joe:** How do you make ASR work then, thru software?

**Carol:** Well there is software that's required, but there's a lot of different software that could be ASR compliant but right now it's, it's a concept. That's, as we discussed earlier, I'm a thought leader and I've been thinking about, back in the early 2000's about how to enable companies to become demand-driven, that was our vision at PeopleSoft, that's the reason we bought FACIT of Demand Flow Technology, we built a lot of pull stuff in but the technology had not quite gotten there before Oracle took over PeopleSoft. I had a lot of people say, I was at the APICS International Conference in 2000, I think it was 2008, and they said, "OK Carol, what have you been doing for the last seven years?" And I said, "Well besides sitting on a tractor, I've been sitting and thinking," and I presented it and I came into the APICS International Conference expecting to see maybe twenty or thirty people in the room and I was shocked when I stood up to speak and there was four hundred people there.

Describing this concept and several of the software companies were very, very scared. They're going, "This is fundamentally different." I said, "Yeah, I know." But it's been interesting to have some conversations with them. There is a tool that is ASR compliant.

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There is a software company out there that does have and ASR compliant tool but ASR, the concept ASR is just that it's just a concept.

**Joe:** Now, putting it into practice, what have you found the difficulty?

**Carol:** Probably the most difficult is when Chad and I spent time with people describing this, we've done eight-hour seminars on this, it takes us about five hours or the eight hours to describe the problem. Because most people don't understand how their MRP systems work. That's the biggest problem. That's the reason we went to, we actually went to McGraw-Hill with a proposal to write a book on ASR. They looked at the table of contents and they said, "Gee, 60% of this book's on MRP." We said, "Well yeah, because you've got to understand the problem before you can understand the solution." And they said that's when they came back to me and they said, "Well you've written about MRP and ERP and Lean and POC and would you consider taking Orlicky's MRP book and updating that?" I was like, "Gee, that's like being asked to write the next New Testament in the Bible, of course, I'd be honored."

That's probably the hardest part is that people do not understand how the system works. Think about it Joe, you talked about this a little while ago, in the old days, we had to specify the system, then we wrote the systems in house, then we implemented them. Well, in the eighties, that became the time for commercially available software or commercial opt-in software were cut. Well now, today in a company, it is rare to find somebody that has a deep level of understanding about how MRP works. Even at software companies they don't have a whole lot of people today that know how MRP works.

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**Joe:** I'm trying to remember, it was probably mid-eighties that I took an American Management course on MRP. And I'm not even sure MRPII was around then or not, I think it probably was, but I just had a basic fundamental concept of MRP and really trying to find software to implement it was difficult.

**Carol:** It was, it was. And then it became, remember we went to client server and then that's when the software companies all started to change because we had the first PC based MRP system, and Fourth Shift was the first software that could actually do MRP on a PC and I remember buying Fourth Shift before they even had an MRP module. But in today's software, the big software companies the numbers of people that can understand truly to a depth MRP are, is a small handful. Even in the larger software companies. They've built on it again, like that tree growing another ring.

People are using it and they're not complaining well then we're not going to pay any attention to it, and then you think about a company the size of an Oracle or an SAP or a Microsoft MRP system, are they going to go in there and start bugging around with what's going on in the MRP module? I don't think so. That son of a gun touches every corner of the system; they're not going to go screwing around in that. They're going, "It's working. I'm going to leave it alone."

**Joe:** I see such significant efforts by methodologies such as Lean and Six Sigma to improve in these areas and is that the wrong approach for most?

**Carol:** No, what we're seeing, it was interesting when I was at the last TOCICO Conference. It's the companies that embrace Lean, Six Sigma and TOC together, are

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seeing several orders of magnitude better results than companies that are implementing each one alone. The reason is that what TOC brings to the party for the Six Sigma guys is that where is that variability? Where is the variability causing the impact to the overall throughput to bring focus to the Six Sigma folks so that they can come in and eliminate that variability because then if I can eliminate the variability on the TOC model then inventory goes down. Then under the Lean side, then well how do I eliminate the non-daily allotted activities? So, that it's been sort of fun at Shelby to be honest 'cause I'm sort of like a child of no world. My first book was "MRP and Beyond."

Then, I wrote two ERP books but in between the two ERP books is when I wrote the TOC book with Eli. So I didn't belong to the MRP community 'cause oh heavens, I actually wrote a TOC book with I mean like, the head devil himself, right? I mean from an MRP perspective.

**Joe:** What was the name of that book?

**Carol:** That was called, "[Necessary but not Sufficient](#)," that I wrote with Eli. Then after I wrote "Necessary but not Sufficient," then I came back and rewrote the ERP book. I wrote the second edition of my ERP book which was, the subtitle on that was, "Tools, Techniques and Applications for Integrating the Supply Chain." So where ERP was usually considered just within our four walls, that book takes a supply chain view. Well then after the ERP book came out, the second edition of that came out, then I went over to PeopleSoft and got involved with the great folks over at JCIT and started talking to them about DFP and John just hated that. He used to wear an MRP button with a not symbol through it. Remember the red circle? With the red line?

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And he would wear that. And it's like here they are, let's talk, oh my God, they're an MRP, ERP company at PeopleSoft and so we wanted to rewrite "Quantum Leap." And so we did. And so when you read "Quantum Leap," you're going to now see in "Quantum Leap the Next Generation," if you know TOC and you read that book, you're going to go, "Somebody with a TOC background rewrote that book." But I was never fully accepted into the Lean world because I'd written the TOC book and I knew about MRP. So it's fun to me now, and here we are in 2010, it's like I've been an orphan of all worlds and now all of a sudden I'm getting a lot of company. Cause people see the synergy between the tools. We are living in this pull environment. We are living, by necessity we have to become demand-driven to survive.

That's what ASR is all about. It is how I can get into markets so that I can build more quickly to demand with fewer resources internally.

When you have the inventory place properly in a position where it can be completed within my customer tolerance time. So think about how Dell computers assemble their computers. Everybody thinks that the Dell computers are made this order. They are really not, they purchase their component to-stock and then they have a buffer of an assemble laborers, so then when you then place your order for Del computer which coincidentally all the configurations that you can do are the material that Dell currently has on hand or coming. Then they assemble your computer to order and get it out the way, how do they do that? Well, they have a buffer of assembly labor that has got in this country. And then the parts would come into buffers based on forecasts.

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**Joe:** One of the complaints about Dell I think always has been sure they run a negative inventory turns, but they shifted the problems to the vender's. In ASR, are we not just shifting inventory someplace else down the line.

**Carol:** No, actually what we are doing is actually eliminating it. We are actually eliminating it and what we are replacing it with is speed and it's had the ability to be able to respond more quickly to demand and be within costumer's tolerance time. So actually it is true improvement because the inventory is truly gone I am not just shifting this. Remember when Lean first started? What did everyone do? Hey, those are the Lean suppliers they bring us the inventory once a day. Then you go back to the supplier's warehouse and had a boatload of inventory.

Is that truly Lean? I don't think so. So what happens is the buffer is that break wall, it eliminates that variability. If can eliminate the variability upstream that I don't have to carry much inventory. So in fact, what happens is there is a synergistic effect to my suppliers; my suppliers can carry this inventory. So not only am I not shoving inventory at them, I am actually helping them improve their overall operation.

**Joe:** Can this work in small companies too?

**Carol:** Absolutely, it is actually pretty quick in a small company, because it is much easier to find those decoupling points. The bigger companies we have to do some what if analysis of "Where is this." Chad right now is dealing some work with the company where they are taking a look at the analysis to those materials after bill had been buffered using ASR

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versus the traditional and what would the net resulting inventory be, so the six months they are taking into do that analysis in the smaller company we would have been done.

**Joe:** That reduction takes place as you are monitoring. You are getting smarter about the monitoring and reducing variability by watching is the next step. You go through that process what happens when you get caught? I mean what happens when there is a fluctuation outside of your control that causes a spike or something. Does that upsets the system and do you short-circuit it or how do you handle that?

**Carol:** No, what happens is that we all know about those order spikes with come in. What we do we actually knowledge them and incorporate that into a one-time adjustment in the buffer, because what we do is first we decide is where we the inventory is going to be. Now I've got very specific control points and then I monitor those buffers so instead of trying to manage everything I'm managing only those key things that I have to. If I know that an order spike coming in you don't turn our back on it, it goes into the plan. You say, I know I have got the spike coming in because usually those wacko order spikes come in with additional lead time to respond to them. So we don't allow just stick our figures in our eyes and hum we ignore it, OK we have got lot of spike coming in and it's here so let's see what we have to do you plug it in and it plans for it.

**Joe:** What types of companies are most adaptable to this?

**Carol:** Well it is usually the companies that have a lot of volatility that they are trying to manage. If the companies that are have rebuilt the materials. One of the companies that actually implemented this, is a company called LeTourneau, out of Texas. They make the

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oil-drilling platforms. And they've done a great job with it. They've been able to implement it across their supply chain and have just gotten phenomenal results with it. Some of the ideas was that their inventory has skyrocketed. This is a company that's grown from about \$100-million company to over 600 million, and their inventory has actually only increased by a factor of like 50 percent over what their original start was. So management and inventory that only increases by 50 percent, for a company whose revenue went up 600 percent. So, I think that's pretty dramatic.

The companies that really do best are companies that have a really highly repetitive build. That doesn't mean that it has to be a repetitive product. My last plant that I ran was an aerospace company, and we made all the overhead bins for the Boeing 737s and 757s. Well, wouldn't you think that those things would be repetitive? They all look alike, right? They're not. We built one of 85, 000 different configurations every day.

What we built today didn't look like yesterday, and it sure didn't look like tomorrow, because every airline has a different-color inside, and the hole patterns that are on the back that attach it to the fuselage are totally different. I was a Lean zealot at that point in my career, and I was like, "Oh, we're going to pull everything! We're not going to use no stinking MRP system!" Then I realized they only had a 10,000-square-foot plant, and I had 85,000 different configurations to build. I had no space to hold the entire inventory.

So I had to go do MRP. That's actually where this thing all started, and this was back in the '90s. This was in the early '90s when we were doing this. That was actually my very first APICS International presentation that I ever did. It was in Montreal. I did a presentation on "Yes You Can: An Aerospace Case Study."

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What we recognized is that the process that the bins go through is repetitive. The product is not. So that sets up a whole different dynamic. Our drum was the thermo-former, which is used to make the face plates that go on the bin doors. That had to run two shifts, but the rest of the plant could run in one.

And so here's a plant that I decided, I was all gung-ho, was going to be a Lean plant. That was it. I mean, this was in the '90s. Womack's book was out. Costanza's book is out. It's all the hot rage. I ended up using TOC, Lean, Six Sigma, and MRP, in the '90s. So it was crazy.

So, an environment that's got that repetitiveness, that's either a product or process, especially in an environment that you get rewarded for shorter lead times, if your customers have a value to you being able to deliver it more quickly, is a great environment for ASR, especially those that use the same purchased component. If I use component and use it in lots of places or if I have a made component that I use in lots of places, this works really, really well.

I have really deep and complex bills, a lot of aerospace companies, not uncommon to get 15 to 20-level-deep bill. Companies with really complex routing like a food processor. Oregon Freeze Dry has done a great job with ASR. They used to use MRP with the standard batch sizes. Their Mountain House division, their sales increased by 20 percent, and their customer-fill rate went up to 99.6 percent, and they reduced their inventory at the same time by 60 percent.

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This, again, is one of those counterintuitive things. You say, "Well, if I'm going to increase sales, I need to increase inventory." Well, no. It's just like LeTourneau. They went up by a factor of six, but their inventory only went up by about 40 to 50 percent. You can't afford it. You just can't afford that inventory.

**Joe:** That's always my argument. In Marketing Concept, I argue till I'm blue in the face and everybody looks at me like I'm crazy. To increase sales doesn't mean you should add more people to your marketing funnel.

**Carol:** Exactly. Well, we can get into a whole thing on how to do marketing, too.

**Joe:** I look at that because what I'm sitting here thinking about is this. I keep going back, though, to a bigger picture of ASR because I keep thinking, as I'm walking through this shop, I'm not necessarily looking for the bottleneck. I'm sitting here looking for the commonality, the things that are common within my structure.

**Carol:** You have hit it spot-on. I love you! You're wonderful! I'm sitting here with my hands stuck up in the air like touchdown. You're exactly spot-on. This is not a TOC concept. And that's the hard part, that it came out in the TOC handbook because everyone goes, "Oh, it's a TOC thing." No, it's not. Actually, it's really counter to... You expressed it perfectly. We aren't looking for the constraints. We're looking for the commonality.

**Joe:** If we had multiple lines, you could funnel three lines into one point and manage that point effectively and then funnel them back out to the rest of the structure.

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**Carol:** Right. It's an enablement. It is the enablement, from the material perspective, for all the pull techniques that are out there, whether it be Lean, whether it is TOC, drum-buffer-rope, simplified drum-buffer-rope. All those techniques, you always trip up on the materials. And you're right; you're looking for the commonality, and then put the lever at the end.

**Joe:** I got it solved.

**Carol:** You're done! You're done! You got it! But Joe, it's counterintuitive, isn't it?

**Joe:** It is.

**Carol:** It's against everything that we've been taught. It's truly that elegantly simple. It addresses this flip-flop that we've seen. I love going out to talk to executives, and they say, "Well, when things get back to the way they were..." I look at them and go, "You're smoking dope!"

**Joe:** It's never going to happen.

**Carol:** "It is never going to get back to the way it was. What are you, crazy?" You've got to deal in this new world. If you don't become demand-driven, you're going to die!

**Joe:** How many times you sat there and said, "This customer doesn't really understand. He doesn't do that." It doesn't make any difference. He's still writing a check.

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**Carol:** That's right, he's still a customer. We always had a saying when I was running the Steuben Group. We had what we called rule two. Rule two was "The customer isn't always right, but they still are always the customer."

We were never allowed to speak negatively of the customer. At the end of the day, the only competitive advantage available to a manufacturing company today, there's only one, and that is to exploit what we can do uniquely, from an operational perspective, that provides value to the customer and profit to ourselves. That's it. It's that simple. You have to exploit what you can do operationally, to provide value to the customer and profit to yourself.

What ASR does is it enables an incredible, unique operational capability that you can then expand across your supply chain that benefits all the links in the supply chain. When I was at SCOR, the Supply Chain Council, and they would talk about, "Oh, the supplier doesn't understand." No, the supplier doesn't see the benefit. Who are you kidding? Companies will collaborate if and only if they see the benefit to it. They're not going to do it just because they're good corporate citizens.

There's no altruism in capitalism. They're going to get together because it benefits them. And so if I can show my supplier how, by instituting ASR across their supply chain, that they're going to have a higher fulfillment rate at a lower inventory, they're going to jump on board, of course. They'd be stupid not to.

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**Joe:** Let's say ASR is implemented. Is there a difference in the type of alerts or things like that, or the buffer status, that you have within that central location, versus, let's say, typical management of inventories?

**Carol:** Absolutely. Because what happens is, with a typical management of inventory, we never go back and look at the planning factors: the lot size, order quantities, lead times and all this. The second step of ASR is that there's dynamic, buffer-level profiling and maintenance. So it's a closed-loop process. It's really a very Six Sigma process that says as our variability comes down, then we will tend to stay in the green, or what we refer to as "Over top of green," OTOG. And so, when you see that, you then go back and you then resize that buffer, so we have dynamic buffers. So it really is very consistent with the Six Sigma approach. I'm absolutely a W. Edwards Deming bigot. I loved his stuff. I had a chance to meet him personally, that I wasn't able to exploit, and I have been upset since that I never got a chance to meet the man personally. I am absolutely a Deming bigot.

As you look at variability, and you start to understand variability, then what does that enable you to do? This drives people crazy. I'll close shop orders and allow the variances to just drop as you would normally allow, then take those variances and put them in an SPC chart. Then, start to take a look at what's my variance over time? That whole idea of looking at what is my variability, how predictable has my process become, allows us to be dynamic in our buffering.

Then the buffers will change. Once the buffers change, now I've got that break wall so that I can enable the full base command centers. That is how I become a true commander of it.

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**Joe:** It keeps shrinking my inventories as time goes on.

**Carol:** Right, without negatively impacting my operational execution. That is how Orga Freestrye has done it. I gave him some numbers on the Mountain House Division. It is absolutely phenomenal when you think about the ability to increase sales 20 percent and fill rate went up from about 80 percent to 99.6 percent with a 60 percent reduction in inventory. They also have an Industrial Ingredients Division, which is more made to order. They now have 100 percent on time delivery with a 60 percent reduction in their lead time and 20 percent reduction in their inventory.

**Joe:** Those examples are in the TOC Handbook, are they not?

**Carol:** Yes, they are. These are some folks that are allowing us to talk about them. Not everybody that has implemented will allow us to talk about it because they view it as their competitive advantage, and it truly is. But, it is only interesting when you think about what other sorts of competitive advantage. When I was running the Steuben Group, they wanted an APICS tour. My president was just livid. He said, "No, are you kidding?" Our little Air Space Division was about 23 percent of the company's revenue; we were about 85 percent of their profits and 92 percent of their cash flow. We were like the crown jewel. He said, "No, no, we can't allow them to come in because our competitors will come in." I said, "It's OK." He said, "No, no, no." I said, "No, it's OK." And we let our competitors come in.

They had cameras, we let write down serial numbers, let them take pictures of the shop, didn't care. We showed them everything that we did. This was the Division we were running; TOC, Lean, Six Sigma, the whole bit in the same place. I said, "We'll be OK."

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Within a year, we owned them, literally. They went out of business and we bought them. They saw what we did and they went back and tried to mimic us. They didn't understand why we were doing what we were doing.

It is the same thing with Antoine; he didn't understand why I put that inventory in that location. What is it buffering for me? The concepts are public domain. It's already out in the TOC Handbook. It will soon be out in Orlicky's MRP 3.0. It's public domain.

That's the reason I write books, I hate writing books, my least favorite thing in the world to do. It probably sounds funny for somebody that has written seven of them. I hate it, but it's a way to get the concepts out there, so that I don't have to go around the world. Personally, I would much rather sit on my farm and sit on my tractor.

**Joe:** Is there something you would like to add about ASR that I did not ask?

**Carol:** No, I think you did a really good job of getting through what was the history behind the change. Your intuition about that statement that you said, "I'm not looking for the bottleneck, but I am looking for the similarities," was spot-on. That is probably the best articulation I have ever heard. People struggle with this and go: "Huh? It's counterintuitive."

**Joe:** Yes. Part of my problem during the interview is that I was sitting there trying to relate it to Theory of Constraints, but I was not getting there.

**Carol:** Well, it isn't there. It is just coincidental that it just happens to be in there because ASR enables any pull methodology, whether it is Lean or drum-buffer-rope or simplified

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drum-buffer-rope. It is really independent of the full concept that it is supporting. This is what the Lean guys have been waiting for.

**Joe:** You moved the control point or you moved the -- I'm calling it the control point, which is really not the word. You're moving the hub to a point of nonvariability.

**Carol:** Correct.

**Joe:** Then you can manage the mura and the muri, and that's what makes it work, and the waste appears.

**Carol:** Absolutely. But what appears is the significant waste. There's the key, because waste, the whole muda thing, is defined as anything that customers are not willing to pay for. But if I eliminate all muda, have I really impacted my bottom line? All muda is not muda. Some of it is going to cost me more to get rid of it than it's costing me, so leave it there. I was in one company once. They toured me through, and they said, "You're a Lean person." I thought, "OK, I'll be a Lean person for you if you want me to be a Lean person." They said, "Because you wrote the book with Costanza." It's like, "Well, yeah, with Dean Gilliam and Steve. We updated the 'Quantum Leap' book."

But they said, "They won't allow us..."

"They," always got to love "they."

"...They won't allow us take the space reduction that we've had as a benefit to our Lean implementation."

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I went out there, and I said, "Show me." Honest to God, Joe, they had a chunk of their plant that they had police tape wrapped around that said, "Do Not Cross." It was in a big empty spot.

I said, "That's not a benefit."

They said, "But look at all the space we eliminated."

I said, "Until you put something in it, you haven't changed it."

They were very disappointed. They said, "We thought you'd understand."

I said, "No, you don't understand. The purpose for continuous improvement is to improve the bottom line of the business. All changes are not improvements. All improvements are changes."

**Joe:** I agree, and I think that's what Dr. Goldratt always said. You've got to focus on improvement. You've got to focus on making money.

**Carol:** Absolutely.

**Joe:** If it's not making you any money, what good is doing the process?

**Carol:** That's why I'd go into a Six Sigma plant, and they would say, "We did 26 Sigma projects two years ago, and we did 100 Six Sigma projects this year. We've got 14 black belts, and this next year we expect to do 1,000 Six Sigma projects." I'd look at them, and I'd go, "How's your bottom line?" They're proud of how many Six Sigma projects and how

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many black belts they have instead of saying, "And here's an improvement to our bottom line."

That's why this whole idea of ASR and TOC used in conjunction with Six Sigma turns your Six Sigma guys into heroes, absolute heroes, because now you can rifle shoot them. You can target them exactly on those projects that when they reduce the variability will be a commensurate improvement in the company's bottom line.

Most Six Sigma guys, they're out doing projects, and it's like hiding their light underneath a bushel basket because they're not working on things that are significant to the true improvement of the company, which in my mind is the bottom line. It's all that matters.

Then they get all excited because they did the project. You go, "Great, you did the project. Where's the benefit?"

**Joe:** I'd like to finish up by saying thank you very much, Carol. How could someone learn more about ASR? How do they go about learning more ASR?

**Carol:** The first thing is there will be a link available to the chapter. McGraw-Hill has really gotten into this idea of the electronic book. The chapter on ASR is available as an electronic book for download. We also have a website available called [beyondmrp.com](http://beyondmrp.com) where you can get some more information on ASR. Then, of course, look out for the new book. Chad and I have until the end of September to get this thing done, and it should be published next year. It'll called, "Orlicky's MRP 3.0."

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We're very excited about that. Now that I'm done with hay season, I need to get going on starting to write. It's all up in my head; now I've just got to get it out onto the computer.

**Joe:** I'd like to, again, thank you. I appreciate it. I had a great conversation. The Business901 podcast is available on my website, Business901.com and also the Business901 iTunes store. Thank you, Carol.

**Carol:** Thank you, Joe. Take care.

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Joe Dager is President of Business901, a progressive company providing direction in areas **such as Lean Marketing, Product Marketing, Product Launches and Re-Launches. As a Lean Six Sigma Black Belt**, Business901 provides and implements marketing, project and performance planning methodologies in small businesses. The simplicity of a single flexible model will create clarity for your staff and, as a result, better execution. My goal is to allow you spend your time on the **need versus the plan**.

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