

An adventure in space—and time

Sam Juniper (from Manufacturing Systems Engineering) and Phil Morris (from continuous improvement) planned the layout of Meggitt Avionics' new factory floor. Using the Meggitt Production System tool known as 3P—essentially a kaizen dedicated to workspace planning—it took three days. Nothing unusual about that, you might think. Except the migration project had already been underway for six months, with little to show for all their efforts. Then 3P came on the scene.

That first half-year was intensely frustrating for Juniper and Morris as they bounced backwards and forwards between operators and managers. From a Meggitt Production System (MPS) point-of-view

in concrete. Another month and there might be little left to plan. As the year passed, the group operational excellence team arrived on site to prepare for the launch of Meggitt Production System. They suggested we revisit the layout.

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they'd started in exactly the right place, the shopfloor. But at the time there was no MPS. "First we designed a layout with the shopfloor very much in mind. But when we took it to management they would not accept it. So then we went back to the operators—but now they felt disengaged by the managers' veto," recalls Juniper. And so it went on.

Breakthrough

Elsewhere, the rest of the migration project was pressing on regardless. Some big bits of kit – ovens and so forth – were being quite literally set

To get things moving, the Site Leadership Council backed a single, intensive three-day event using the Lean tool called 3P (production preparation process). Juniper and Morris could now make a fresh start co-developing a solution with the shopfloor. And senior sponsorship would presumably make it much easier for any plan to win the support of managers. Would everyone now hop on board? Not yet.

The stone-walling of the previous six months did not evaporate automatically. "The first two days we still struggled with buy-in," recalls Morris. "There was lots of 'We're not changing that!' and 'My manager says we are not looking at that'. Most operators just wanted to replicate their old layouts, even though products and processes have changed beyond recognition over the years."

Hands-on

Both men fell back on their still-fresh MPS training in coaching skills. They patiently questioned, probed, explained and drew on their own experience in production engineering and continuous improvement to generate new ideas. The breakthrough finally came thanks to some blank sheets of paper. "One of us asked what the operators would do if they could start from scratch and do anything—and



Above: Front: Phil Morris. Back: Sam Juniper: part of Meggitt Avionics' growing body of trained 3P practitioners.

From deadlock to best practice—in three days

BEFORE

Slow, laborious, hierarchical, individualistic, overly-rigid, vulnerable to silo thinking and sudden changes of mind/opinion/personnel.

AFTER

Fast, structured, co-operative, cross-functional, efficient, flexible, best practice.

that was it," says Morris. "The moment we got them drawing and laying things out on paper they were saying 'Actually that doesn't need to go there, let's swap those, and move those over there'."

The speed of the shift—from resistance to engagement—taught the pair an important lesson they are keen to share, says Juniper. "Preparation is vital for 3P to succeed. As part of that preparation you need to think about who you are working with – their learning styles, if you like—and what techniques and exercises will help bring out their best. We'd been doing a lot of conceptual stuff in the classroom, talking theoretically about how best to deliver materials or equipment. With hindsight, operators are people whose daily life is very visual, physical, spatial, tactile. We should have got them hands-on from the start."

Now, with some participants declaring "We've been doing this wrong for a

reporting back. But from outside the room it was hard for them to understand the reasoning behind some of the proposals or the need for so much detailed planning. Day two, with managers more closely involved, worked better." The remainder of the exercise would see directors and managers dipping in and out continuously.

Paper dolls

For those who needed it the event now moved out onto the shopfloor for a huge 'paper doll' exercise. "Some could visualise easily, so we would stay in the room to focus on breaking down their pre-conceptions and opening up their thinking. Others needed a much more *gemba*-like approach, walking the new and old locations to help them understand things more 'visually'."

For Juniper and Morris this was only their second 3P project. The first had been conducted alongside MPS experts from Meggitt at group level. This led

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decade!", it was time to bring the managers back in. Morris: "On day one we'd just been

them to underestimate the scale of the preparation that underpins a successful exercise, Morris

Birds of a feather ...

3P has also been used to re-plan Meggitt Avionics' office space to encourage and support cross-functional working.

The old way of thinking routinely grouped people according to their functions. It gave little thought to spaces in which people could come together for months or years at a time to work on multi-disciplinary projects. The MPS principle of thinking in terms of silo-busting processes

the value stream? Or should it be people who share the same customer or work on the same project?

The MPS principle of thinking in terms of silo-busting processes rather than functions has shone a bright light on this failure

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So who does need to sit together? Is it people in the same department? Should they be doing the same job or performing roles adjacent in

It was a 3P exercise that got people talking about such things in a structured way for the first time. Among a number of important innovations that followed are the integrated project rooms in which multi-function teams can now make a semi-permanent home in which to (for example) develop a new bid or design a new product. ■



3 TOP TIPS

Those three Ps could stand for Prepare, Prepare, Prepare. A typical 3P exercise lasts just five days. There's no time for distractions. So ...

Make sure you understand your audience, their communications needs and learning styles. Some can work through their ideas on a whiteboard. Some will need to walk the talk. Many may have no idea what they need to help them visualise their preferred outcome. (In which case, remember the fourth P—Paper Doll exercises.)

Know what you want to achieve and make sure you know what your manager's expectations are in terms of your limits and their input. You will probably need to coach them to get to the bottom of their true

intentions. Don't be fobbed off with quick or easy answers. Don't be afraid to probe what they really mean.

Avoid following too rigidly the process you used in training. Every situation, every group, will be different.

Don't forget, you are also facilitating your participants' ability to sell the solution to their own bosses. Not everyone will be willing or able to do that.

thinks: "Understanding what people really want—getting their buy-in beforehand—that is decisive. Ask any busy manager and they will tend to answer in generalisations: 'I want it to be right, I want my team to buy-in to it.' Then show them the results and they say, 'but you haven't done this or that'."

Coaching the boss

The solution is to guide people past their own platitudes and stock answers, towards a proper definition. And to do that you must be prepared to coach your 'boss'. Working with 3P in the very early days of MPS implementation made this a stern test for Juniper and Morris. Today's 3P practitioners shouldn't find it quite so challenging. "If you've got a director or boss who is engaged with you – and we all should be now – then it will be perfectly possible to have that kind of conversation with them. It should come as no surprise,"

says Juniper, who as a new team leader has recently taken on his first managerial responsibilities.

The 3P exercise achieved in three days what six months of patient diplomacy hadn't even dented: a shopfloor layout that is home-grown, in place and working well. A real result for all concerned. Like all Lean outcomes, the layout that Morris and Juniper created is 'provisional', awaiting its own inevitable improvement. Changing operational needs will certainly require tweaks and probably major revisions. But today the most prestigious contracts typically demand rigorous proof of the bidder's ability to expand and reconfigure their operations to suit. Meggitt Avionics now has a strong and growing body of trained 3P practitioners as well as a thriving MPS culture. Together these provide precisely that proof. ■

Evolving the DNA of DLA

Steve Favell (Interim Works Manager Operations) and Jon Bradley (Continuous Improvement Facilitator) have helped lead implementation of Meggitt Production System at Meggitt Avionics. The experience has been a co-operative one for pilot sites and Favell and Bradley are proud to be so closely involved in helping to evolve the DNA of Daily Layered Accountability. Here they share their thoughts on the many changes they've experienced.



Q: How has MPS changed your own roles?

Steve: Twelve months ago I was what you might call a traditional manufacturing manager, focused on turning the handle. Now I oversee continuous improvement

and turns us into a single team with shared objectives.

came down and on-time delivery (OTD) improved. Everyone could see real change and straight away we had them all pulling in the same direction.

Q: How do you explain the speed of the change?

Steve: DLA pulls so many levers simultaneously. The engagement of the shopfloor, support from senior management, coaching. And the discipline of accountability is very important. I think of it as daily layered accountability with a capital A.

Jon: You can see it at our RAIL [rolling action item list] meetings. We used to spend an hour-and-a-half going through a hundred-odd issues. Now we deal only with the top issues—the *Vital Few*—all the time pushing for closure. You see that discipline of DLA transforming everyone's behaviour.

Q: Even at the very top?

Steve: Especially at the very top. At Focus Factory, the site leadership meeting, everyone will be waiting for it to start on time, just like the Level One and Two DLAs on the shopfloor. It's very unusual for directors to arrive late but if they do they will be rushing and a bit embarrassed. And it's rare for people not to be able to answer the questions too. People do their homework now. It's a pride thing. No-one wants to be seen wasting colleagues' time or letting someone else down.

Q: If you took DLA away, do you think the rest of MPS would still work?

Steve: I don't see how it could. Everything hangs off that shared awareness and discipline created by daily communication. And it's also the mechanism that breaks down the old functional divisions

and turns us into a single team with shared objectives.

Jon: We were already doing some MPS-type things. Our Integrated Management Team (IMT) meeting ran for 10 years. It was good and people did their best with it but something was missing. It needed to be plonked in the middle of a structure that supported it from above and fed it with information from the coalface. It's integrated within our Level Two DLA meeting now.

Q: We've heard about how DLA is a 'silo buster'. Can you explain what that means for Meggitt Avionics?

Steve: Rather than trying to make the production process suit all the different functions, DLA forces us all to concentrate on what the functions need to do to support production. The old conflict between diversions, production costs and OTD is a good example. [Diversions are work charged to overhead.] If you said to people, "diversions are bad", they'd book all their time to work-in-progress and suddenly your unit costs were going up. But then when someone said, "We need to get work-in-progress under control to

Jon: The 'rework' story is much the same. Without DLA senior management would see rework rising but have no idea what was causing it. And on the shopfloor we were prioritising OTD and fire-fighting instead of tackling root causes.

Q: So how is it different now?

Steve: The Living Pareto charts on the DLA boards leave nowhere for recurring problems to hide. Something fundamental that can't be solved at the cell level gets to Focus Factory very quickly and directors are soon saying, "We're doing what? Stop! We are going to spend a day to fix this properly." The culture has changed. No-one who touches the process is prepared to accept the same problem appearing over and over again.

Jon: And in some cases the process change or component redesign that comes out of the kaizen won't be the end of it either. The existing RFC [request for change] might prioritise use of existing stock. If you don't pick that up as well it could take a year for a component improvement to enter production. Without the constant reporting and daily reviews of DLA that sort of thing

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and implementation of the MPS system as well as security, safety and site services. But if I was still a manufacturing manager my role would be very different too. It used to be about dealing with what was right in front of you. Now you need a much broader and longer view of production.

Jon: The way my role has changed tells you a lot about how MPS has changed Meggitt Avionics. If there was a problem, a quality issue say, I'd get the right people together to investigate it, identify the problem, find a solution, follow it through and embed the improvement. Now the day-to-day problem-solving behaviour and continuous improvement mind-set have been embedded in the teams themselves. That's a big difference.

Q: Both of you share Mark Crompton's view that MPS is as good as any production system gets. At what point did you realise what you had on your hands?

Steve: When we got the Daily Layered Accountability structure in place, with the three levels aligned. We saw instant results as soon as we had Focus Factory—the daily site-level leadership review—up and running. Arrears

If you are just starting out with your own DLA board, my big tip would be: don't spend too much time in the meeting room. Get the boards up and running quickly and then refine them. That will also get more coaching coming from within the teams themselves

improve our margins", suddenly diversions and overheads would be rising again. So what you had was a knee-jerk reaction, giving the desired effect, but without actually solving the underlying problem, just shifting it somewhere else. We were squeezing the balloon in one place only to have it bulge out somewhere else. That shouldn't happen now because everyone comes together every day to look at the same picture. And if it does happen? The story comes up from the shopfloor and Focus Factory is straight on to it.

could also stay hidden or ignored for ages, saving a few pounds of stock but costing thousands in rework.

Q: Have people taken easily to those DLA boards or is this an area of MPS implementation that needs lots of support?

Steve: We do a lot of coaching work around DLA boards design and use. It is an absolutely key part of encouraging the behaviours that make DLA work as a process. Everyone needs to be coached and encouraged to



Above: Back: Jon Bradley. Front: Steve Favell. With MPS, the more we do, the more we realise what we can do.

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think about how they can go on to embed coaching others into their day job. DLA boards are great opportunities for coaching because you see people in action every morning and you can respond immediately to something. If you are just starting out with your own boards, my big tip would be: don't spend too much time in the meeting room. Get the boards up and running quickly and then refine them. That will also get more coaching coming from within the teams themselves.

Jon: We attend a lot of DLA meetings to observe roles, language, behaviour, communications style. We look at technical aspects too. KPI selection and alignment, data presentation and so on. The board should meet the team's particular needs but standards

matter too. They need to be understandable to everyone at a glance.

Steve: We've used the training materials to pull together some reporting sheets covering the key issues. They were meant to record what we were doing, not to score performance. But the cells themselves soon wanted to use them as well.

Q: Do you think there are any functions that wouldn't benefit from using MPS?

Steve: I can't think of any. We've had some great success beyond the shopfloor. For example, we used to get any number of units that didn't ship purely because they were on some kind of 'hold' controlled by Commercial—a credit issue, contract problem or something. Now, a visual

management system called the Shipping Dashboard shows exactly what the commercial team needs to do to avoid delivery delays.

Q: Given your early successes, do you think there is any sense in which Meggitt Avionics has reached a plateau with MPS?

Steve: Not at all. We've started this, it's rolling—but if you ask anybody they'll tell you there's lots more we can do. With MPS the more we do, the more we realise what we can do. And that's how it should be. To get the best out of MPS you can't be the kind of person who sits back and says, "Yes, this is good enough." You've lost any impetus to improve then. Who'd want that? ■

Coach class

Coaching is an absolutely fundamental Meggitt Production System skill. How does it work? In problem-solving, where managers used to be expected to provide answers, they are now expected to use coaching techniques to help the individual find a solution for themselves. The idea is to develop an individual's skills, insights and self-reliance at the same time as finding good answers. From supporting a colleague working alongside you, to helping a senior manager grasp a complex technical process, everyone can, and everyone should, coach everyone else. Here are some tips to get you started.

1. Realise that every request for help is an opportunity to coach.
2. The best coaching is delivered as a routine part of the daily round.
3. A quiet word in private is much more effective than a public lecture.
4. Pay special attention to 'how', as well as 'what', you say. A poorly chosen word or inappropriate tone of voice can convey entirely the wrong meaning.
5. Be careful when using humour. Not everyone will get the joke. Humour can help reduce tension and awkwardness. But sometimes it just feels as if we are not being taken seriously.
6. If you think you might have spoken hastily or used the wrong tone, go back and put it right as soon as possible.
7. The key to good coaching is good questioning. Poor coaching questions fail to stimulate deeper thought. They are often 'closed' (ie, yes/no answers) or 'leading' ("Would you say that X needs to be done?"). Good questions encourage self-discovery and critical thinking. They are often 'open' ("How would you ...?"), probing ("Why do you think that?") and systematic.
8. Don't rush in. All good questioning begins with good listening and observation.
9. And try not to give away the answer! ■



If only we'd known ...

Seasoned advice for MPS 'newbies' from Steve Favell, Interim Works Manager Operations, and Jon Bradley, Continuous Improvement Facilitator, from the Meggitt Avionics MPS implementation team.

You'll wish you'd thought of it

Think of all the things from your own experience that you would want from a production system and MPS is it. There's no miracle stuff. It's common sense. You'll recognise it. But you'll also be amazed at the speed of the results.

If you are half-hearted, you'll miss out

Park your cynicism. Embrace fully the core of MPS. Daily Layered Accountability, the behavioural change, the training, the problem-solving aspects – these are absolutely fundamental and they are what has given us our headline results.

It's not extra work, it's different work

This is not something you do 'as well as', this is something you do 'instead of'. MPS processes like the DLA meetings will replace (and improve on) many of the things you do now.

If you've got good things, keep them

If you've got something that works and people use it, don't scrap it, build around it. You don't have to throw everything away.

Don't be afraid to adapt things

But if some part of MPS doesn't fit your business, don't force it.

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That's the beauty of MPS. It's not one size fits all. It's flexible, scalable, targetable. Successful implementation is about taking the tools, the framework, the methodology and the behaviours and then applying them in the real world scenario of your business in a way that works for it.

Cynics have reasons too

They may be thinking 'we did this five years ago and nothing changed'. They may have a point. You'll never convince them until

they see some things start to change. So, keep at it and let your own actions and behaviours prove your point.

Don't feel guilty

If you think something needs discussing, raise it. No-one is going to get into trouble for waving red flags. They are just opportunities to improve what we do. None of this is personal. It's all about the process.

To understand DLA boards you need to use them

Don't spend ages in a classroom. It's only when teams start to use DLA boards, no matter how imperfect they might still be, that they learn how to get the best out of them. Fine-tuning a board to meet changing needs is normal.

Top-down SQDIPs are wrong from the start

If you are helping a team implement DLA work closely with them to co-develop a DLA review meeting that works for them. Coach them in how to develop measures that are important to the business and which provide a clear, unambiguous picture of the things they do.

Problem-solving is everyone's job

Get good problem-solving done at every level within the business. It is the accumulation

of all that 'local' activity that delivers the very big overall improvements.

You'll probably need a new approach to kaizens

Make sure you have a solid kaizen process that focuses on the Vital Few, pulls-in the right people and makes them accountable for delivering results. DLA gives you lots of information to help you select your vital few. So, no more guesswork. ■

Safety first

Every morning Steve Favell jogs round the plant preparing his report on site safety for the Focus Factory meeting. In 10 minutes he achieves something that was more difficult before Daily Layered Accountability.

I see as many Level One and Two DLA boards as I can. [The boards cover Safety, Quality,

needs doing before there's an accident'. Or they catch me on one of my regular walks round.]

If I see red, I stop to find out more. If it's all green, I move on. If the board hasn't been filled in yet, I'll pause to find out why. Ten or fifteen minutes later I'm reporting my findings at Focus Factory

Delivery, Inventory, Productivity/ Cost.] Every board's format is the same, so I can take it in at a glance. If I see red, I stop to find out more. If it's all green, I move on. If the board hasn't been filled in yet, I'll pause to find out why. Ten or fifteen minutes later I'm reporting my findings at Focus Factory [the Level Three meeting at which value stream leaders, function leaders and the site leadership council review the whole plant's current performance].

"This routine is well-embedded now. If I'm not there someone automatically does it in my place. Everyone can see that these things are now being taken very seriously, so they don't wait for me to do my rounds. Stuff gets put on the board throughout the day. They phone me and say 'we've got a hazard here, this

"I can't think how I would have done the same thing, in such depth, before DLA. There just wasn't the mechanism to gather the data quickly. Tracking down the right people and explaining what I was trying to do would

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have taken days. The shopfloor wasn't so engaged either, so we tended to hear about a thing only after it was already a potential problem. And that might not be for three months, at the quarterly health and safety review." ■



Above: Steve Favell. With MPS, the more we do, the more we realise what we can do.

PLMPS

Engineering has £12-15 million of live programmes. Some have life-cycles that will span decades. Isn't this exactly what the cradle-to-grave Programme Lifecycle Management model was developed for? So what does Meggitt Production System bring to the party? Steve Free (Head of Engineering and Projects) and John Anderson (Design Services Team Leader) explain.

Engineering is an area of the business in which it is not immediately obvious how Meggitt Production System will fit. Programme Lifecycle Management (PLM)—with its flexibly-timed 'gate' reviews and seven separate phases, many of which might last for a year or more—was designed specifically to govern programmes lasting 20 or 30 years from proposal to final withdrawal. But Engineering's role is not only about the [very] long view. It provides hour-

to be a matter of things not being given the right priority. Being able to escalate to Focus Factory is a useful way of pulling those contributions forward, bringing everybody along, so we can stay on schedule."

That said, Free is keen to bypass Focus Factory where he can, instead using peer-to-peer links between departmental DLA meetings at the same level. DLA is fundamentally about getting fast solutions to problems, so why not go straight to the people who can help you? "Focus Factory needs to

Engineering's six integrated project teams (IPT) each 'owns' a product or product family. They already had well-established daily stand-up meetings, so these are now being converted to DLA-type reviews

by-hour support for the daily drumbeat of production. And at all times it remains the company's guardian of technical certification and compliance.

Clearly, then, this is not a matter of 'MPS versus PLM'. It is not a question of either/or.

Valuable connectivity

Free and Anderson both value the connectivity and discipline Daily Layered Accountability (DLA) creates throughout the business. Says Free, "In just two, twenty-minute meetings each day we pick up many more issues. That means more work for us now but really we are pre-empting issues. We would, in any case, have been reacting to the same things a week, a month or a quarter down the line."

Focus Factory feels like a place where Engineering is more likely to give than to receive. But the discipline it creates imposes more realistic timeframes on shared workflows and that is a very welcome development. "The main way other functions can help us is to understand how time-critical their workflow contributions are when we are trying to get a bid, offer or solution to a customer on time. It's not that they don't understand all the things we have to do. But among the various DLA tier meetings there is still quite a range of levels of maturity, so it's more likely

be kept punchy and focused on the main issues. If a problem falls short of being business critical we encourage our people to take it straight to the MSE [manufacturing systems engineering] DLA meeting." Are there no objections? "It's working so far. I'm sure they'll tell us if it's no longer welcome."

Fallout from OTD

DLA has proved so good at winking out production issues that Free sees the experience of Meggitt Avionics (MAV) as a cautionary tale for other engineering functions about to implement MPS. Meeting or beating that new 98% on-time delivery benchmark can require lots of momentary changes to processes, products or parts. The alternative would be to stop production for a root-cause fix. But that would delay deliveries.

"We've done a fabulous job improving on-time delivery and quality to the customer," he says. "But it has meant many more requests for change. These can be anything from a label error to a major product design change. Because we are the gatekeepers of product certification every one of them must flow through here and be approved by us." This "backwash" (as Free calls it) is the result of DLA's X-ray-like ability to reveal previously concealed issues while



Above: Back: John Anderson. Front: Steve Free: DLA has an X-ray-like ability to reveal previously concealed issues, while simultaneously energising the whole organisation to seek them out.

simultaneously energising the whole organisation to seek them out.

Anderson is at present analysing MAV's deviation data in close detail, looking for ways to reduce deviations at source. What's he expecting to find? "For example, we do find that certain parts of certain processes can often fall just slightly out of tolerance.

More analysis and investigation might reveal that there is no technically significant reason why that tolerance needs to be quite so tight. In which case, would we be able to make it a little bit wider and so stop the deviation being raised at all?" Under MPS striking that balance between deviations that maintain OTD and delivery delays that enable root causes to be tackled is always going to be a ticklish matter.

A DLA board to suit every need

The DLA structure in Engineering is still evolving. But here's a current snapshot.

- Engineering's six integrated project teams (IPT) each 'owns' a product or product family. They already had well-established daily stand-up meetings, so these are now

It is designed to support continuous improvement in adherence to the function's own internal standards.

With so many applications of the DLA tool in play it is no wonder that Free is keen to offer design advice to newbies. He warns against getting carried away by the huge potential for improvement: "Or else,

In just two, twenty-minute meetings each day we pick up many more issues. That means more work for us now but really we are pre-empting issues

being converted to DLA-type reviews. Each IPT feeds into a combined 'programmes' review supporting a weekly level four meeting with Annette Hobhouse.

- An 'order fulfilment' review, run by Anderson, reports straight into Focus Factory. Free calls this the "How We Serve The Business DLA".
- And thirdly, there is an inward-facing 'capabilities' review.

if you are not very careful, what starts off as the Vital Few, ends up being everything".

Half the trick, says Anderson, whose own DLA structure is the most mature in the department, is to try not to be too prescriptive. "Our programmes board, for example, doesn't have an I or D in it. But it does have a C, for cost—costs are very important in development programmes if the thing is ever going to make a profit." ■

Leading—the way

Sam Juniper is an experienced engineer who recently became a team leader, his first management role. Here he explains how Leader Standard Work, the MPS method for supporting managers, is helping him grow his skills and his confidence.



When Manufacturing Systems Engineering Team Leader Sam Juniper completed his masters degree in aerospace engineering his mum gave him a beautiful orange stone. He tells the story to illustrate how his own quiet love of hard science has always been a little out of place in a family of extroverts.

engineering, of course. But as a technically-minded person the leadership part of the job feels more art than science. The Leader Standard Work model doesn't spoon-feed you but it does give you a nice support structure for developing your soft skills for the 'people' parts of the job." Leader Standard Work helps make the business more robust and flexible because it separates the role from the

He was working long hours and weekends managing a team of experienced Meggitt electrical contractors relocating test equipment to the new factory. "The Leader Standard Work approach definitely helped me to not just manage the team but lead it," he says. The migration was performed in two phases and the first was not a great success: "We did a lot of work in a very

Leader Standard Work methods helped Juniper reflect on the shortcomings of the first phase. "I put a lot of effort into thinking about what the team needed to know and how I was going to communicate it. I developed a much cleaner communication style which got the key messages across—what needed to be moved, and when, to optimise the recommissioning. And I was much more mindful in the second phase of using praise and recognition to keep spirits up. The regular Fish and Chip suppers didn't do any harm either."

Phase two went much more smoothly. Juniper wrote to the contractor thanking everyone involved for the quality of their work during all those late nights and weekends. If he had ever been in any doubt about the power of a simple thank you, the response he received said it all. "They told me it was the first time they'd ever been thanked." ■



Above: Sam Juniper: From managing to mindfully leading with Leader Standard Work.

As a team leader, I am doing and managing. I am very comfortable with the engineering, of course. But as a technically-minded person the leadership part of the job feels more art than science

Now, as a new manager in a technical discipline, he finds himself negotiating similar ground. "As a team leader, I am doing and managing. I am very comfortable with the

person. But there are big benefits for individuals too, especially if they find themselves in unfamiliar or high-pressure situations, as new managers often do. One such came for Juniper earlier this year.

short time but the end result was messy. Lots of little timing issues meant that, even with most of the job done, no single piece of kit was ready to be tested and commissioned."

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A guiding theme of Meggitt Production System is neatly summed up in the maxim: 'Accept only good work—Do only good work—Pass on only good

The power of Daily Layered Accountability to solve problems rapidly depends crucially on the quality of the information that flows into and through it. The problem statement, formal or otherwise, is where it all begins. Get those initial information inputs right and everything else becomes possible. So what are the dos and don'ts of great problem statements? Manufacturing Systems Engineering Team Leader Sam Juniper says:

All good problem statements begin with, and can only begin with, good observation and attention to detail

work'. As we've heard, it's one of Managing Director Annette Hobhouse's favourites.

But not every piece of good work is carved from metal or held together by screws. Even in a company like Meggitt—a company that makes real things—it is very often a matter of 'good information'.

Don't worry too much about the how

Initially a problem statement can be in writing, a conversation or a diagram—even all three. At first the

form of communication is not as important as the quality of the information. The team can work together later to capture the problem statement in a properly-documented way.

Don't pass on your problem without thinking about whether you can describe it adequately

Like all bad communication, a bad problem statement may save its author a little time and effort—but only at the expense of making life harder for the person who receives it. Everyone is the poorer for that.

Do pay close attention to what is happening

All good problem statements begin with, and can only begin

Do use the tools

Good questioning of what you are experiencing will be vital when it comes to describing it to someone else. Don't forget your 'Five Whys' and the other problem-solving tools.

Don't think "I haven't got time for this."

It's your manager's job to help you make time—to set you up to win.

Don't worry that you haven't been given permission to get involved in solving problems. You have

MPS grants you that permission by right. When managers think otherwise, they are mistaken.

Do get engaged

When you experience a problem you are the eyes (and ears)

Good questioning of what you are experiencing will be vital when it comes to describing it to someone else

with, good observation and attention to detail. Can you provide a careful and considered description of your issues?

of the whole business. You are vital. Only you can keep the things you do running sweetly and working well. ■

Never too late

Some distance from the factory floor, Meggitt Production System has been working its magic on an altogether different kind of on-time delivery problem. 'Bid lates' are contract quotations submitted after the customer's deadline. For years they have hovered around the 20 to 30 mark, stubbornly resisting every effort to reduce their number. Today there are just two. We asked Richard Johnson, Bids and Proposals Manager, to explain how it was done.

Richard Johnson and his colleagues had tried pretty much everything to improve on-time delivery of bids. Everything short of threats in a darkened alley. Nothing produced a sustainable

system.) Participants view a rolling seven-day window of activity. Notionally a Level Two meeting, it isn't formally tied into the three-tier DLA structure but it is linked to the various morning DLAs held in contributing departments. The attendance list properly reflects the path of

bids and prospects active over the coming seven days. Finally we go over any that are about to go out of validity. This is our trigger for a relationship-building follow-up call to the customer."

A new realism

None of this sounds like rocket science but the results speak for themselves. The web of behavioural and attitudinal changes spun by the new approach is far-reaching and extraordinary.

Johnson credits some of the turnaround to increased personal responsibility: "Once someone commits themselves publically to a particular date, it becomes their date and they do their best to meet it or better it." This sense of control has, in turn, stimulated a new confidence and realism in dealing with customers. Realistic deadlines and milestones are much more likely to be set right from the start: "As soon as we know that a certain date might become a problem we can call the customer and talk it through. Usually, eight out of ten are fine about it. In fact they are pleased to see us on top of things."

A new, tougher attitude towards problem 'prospects' has also emerged from the daily sharing of insights and reviewing of good data: "We can now see where we've been bidding regularly for years with no success, or where

Bid preparation is another process which must transcend the old functional barriers before it can succeed on its own terms. The silo is its enemy. DLA's cross-functional daily stand-up meeting had once again provided the magic bullet

improvement. The sheer complexity of the bid chain, each link with its own departmental priorities and demands, seemed to defeat them every time.

Then, at Annette Hobhouse's encouragement, they picked up the MPS toolset. "Annette believed that we could crack this if we applied Daily Layered Accountability principles—visual, consistent, the right metrics, the right participation, a daily drumbeat—through a stand-up meeting dedicated to the task," explains Johnson. And she was right.

Bid for freedom

The Meggitt Avionics Enquiry Management System DLA (a bit of a mouthful, so MAVEMS DLA for short) now brings together all the many people, roles and functions involved in creating, pricing and approving a bid. It first met in June and within six weeks the transformation we see now had been achieved. Bid preparation is another process which must transcend the old functional barriers before it can succeed on its own terms. The silo is its enemy. DLA's cross-functional daily stand-up meeting had once again provided the magic bullet.

The 15-minute MAVEMS DLA runs at half past nine, four mornings a week. (On Wednesday everyone takes a step back to check on the slow-moving bids quietly travelling through the

workstream: all Commercial Officers (they run the bids), the Sales and Marketing team, representatives from Production Engineering and Procurement, and (frequently) senior management.

Months of work

Johnson runs through a typical agenda: "We start with a snapshot of all the bids on our database that look like they are running a bit late. There's a quick run through anything new which has arisen since the last meeting. Anything that requires

We start with a snapshot of all the bids on our database that look like they are running a bit late. There's a quick run through anything new which has arisen since the last meeting. Anything that requires a proper strategy is flagged up there and then

a proper strategy is flagged up there and then: the bid to design a new assembly for Boeing or BAE Systems, with thousands of components and complex contract terms and export controls, can take several months to prepare. We then review all the

promising activity is really only an aftermarket supplier filling up its web catalogue." Because accounts are distributed across several commercial offices, spreading the workload, trends like these used to be hard to detect. Now a managed response

is possible. The sharing of information each morning also highlights duplications of effort, enabling resources to be pooled and problem buds nipped.

Harmony and understanding

The new discipline of four meetings a week has worked wonders. "Even weekly meetings

individuals, spreading from the DLA meeting out across the departments and through the management layers. "We used to pick up the feeling that somehow bids weren't part of the day job – perhaps because they are concerned with the future rather than the clamouring of the here-and-now," says Johnson. "That's much less of a problem now.

there is a much better understanding of how we must all work together if Meggitt Avionics is to deliver its bids on time

left plenty of time for people to forget or to have other priorities pressed upon them," says Johnson. But the bigger impact has come from a deeper understanding of both the process and the demands it places on

Generally, workload management for people involved in servicing the bid process is more sensitive. And there is a much better understanding of how we must all work together if Meggitt Avionics is to deliver its bids on time." ■



Above: Richard Johnson: Increased personal responsibility leads to a sense of control that stimulates a new confidence and realism in dealing with customers.



Empowered

Commercial Officer Craig Roberts has seen his day-to-day work transformed by three new tools—MAvEMS DLA meeting, Shipping Dashboard and Credit Warning List—all introduced as part of MPS implementation.

The new Enquiry Management System (MAvEMS) DLA meeting helps commercial officers like Craig Roberts shepherd bids for new contracts through a complicated construction, pricing and approval process. In just six weeks the meeting helped cut the number of bids that miss the customer's submission deadline from 30 to just two.

"MAvEMS itself is a mature system," explains Roberts. "Each day we load all the new leads and enquiries. Then the system

The Shipping Dashboard is a visual management system which uses live graphics to show the status of everything due to ship today, tomorrow and within the next seven days. "In the commercial team we can now see at a glance which units have a red flag against them, a sign that there is a problem with compliance or the contract review, which we need to tackle if the delivery is to go ahead on time."

A similar logic—early warnings to smooth on-time delivery—lies behind the Credit Warning List. "Three levels

In the commercial team we can now see at a glance which units have a red flag against them, a sign that there is a problem with compliance or the contract review, which we need to tackle if the delivery is to go ahead on time

sends the bid requirements to the various functions. After that, it's down to us. For the bid to meet its deadline we often have to do quite a bit of progress chasing. If people don't see the bid process as a priority, even that might not be enough. The daily DLA process makes a big difference. It keeps everyone in the picture about what we are doing and what we need to do to keep the bid on track. And if something does go wrong, it gives us a forum each morning in which we can solve the problem quickly."

The new Shipping Dashboard and Credit Warning List tools were the fruits of a kaizen to tackle another long-standing source of frustration. Shipment delays were being caused not by production hold-ups but by eleventh-hour administrative issues. "Things would look fine right up to the last minute. You couldn't see if there was any kind of problem with the customer until you hit the button to finalise the transaction," says Roberts. "If you did that at 12 o'clock on a Friday at the end of month, that was it. You'd missed your delivery slot."

of alert – red, orange, yellow—indicate the urgency with which customer payments on account are needed if shipments are to proceed on time. Red means urgent action is needed by Commercial and Finance," explains Roberts.

Both tools, Shipping Dashboard and Credit Warning List, are reviewed at each morning's Level Two Commercial DLA, enabling urgent issues to be referred up to Focus Factory immediately. ■



Above: Craig Roberts: DLA cut late bids from 30 on average to two in just six weeks.



Above: Rita Tobin: from the moment we escalate a problem from our KPI board, we can be certain of a response within a week. It is an amazing transformation.

Say goodbye to silos

Purchasing Manager Rita Tobin is impressed by Daily Layered Accountability because it makes it hard for people not to get involved. But most of all she values Focus Factory. This is the Level Three Daily Layered Accountability meeting each morning at which site leaders, function heads and value stream leaders review the performance of the whole site. She tells us why.



"That's why Focus Factory is so valuable to us. It has driven out all that silo stuff. We all have the same priorities now. Each morning Focus Factory makes sure we are all pulling in the same direction. Problems are discussed openly and everyone can see their true impact on the business. No-one thinks we are crying wolf any more. Having everyone in the room makes it very easy to escalate things. If someone is out of the office a lot, Focus Factory is the place to catch them. If something needs doing, it is made the responsibility of a named individual – who is

if a supplier tells us a drawing is out of date, say, or a certain material is now obsolete, we can't complete the order without help from

changes in operations leadership in my time at Meggitt Avionics. Oddly, the uncertainty that created seemed to exaggerate the silo effect, making it even

Everyone was focusing so hard on their own priorities it was hard for any of us to see the bigger picture

engineering. In the past we could wait a very long time for that support. Everyone was focusing so hard on their own

harder to get support from other parts of the business. Now, the moment we escalate something from our own DLA board, we

likely to get on with it promptly if only to avoid having to answer the same questions at two consecutive meetings. At the end, when we break up, people often go into huddles of twos and threes. This is when lots of problems get solved very quickly. Something that might take a week to deal with by email can be sorted out there and then in a few minutes."

"I wouldn't say nobody cared before DLA and Focus Factory, but now people do go out of their way to support each other." ■

Focus Factory makes sure we are all pulling in the same direction. Problems are discussed openly and everyone can see their true impact on the business

priorities it was hard for any of us to see the bigger picture. There's also been a lot of

can be certain of a response within a week. It's an amazing transformation.

Two Ps in Procurement?

For Rita's purchasing team, deciding on what their DLA key performance indicators should be was quite a challenge. But once they had some 'base settings', refining and adapting the board proved relatively simple. Here's Rita's advice for 'getting it done, rather than getting it perfect'.

1. Don't get hung up on the five categories: safety, quality, delivery, inventory, productivity/cost.

Perhaps start by using only some of the letters. We had three at first. Now we have six. Our board features two Ps!

2. Don't worry if your first KPIs don't work very well.

Try something else. Enjoy experimenting with them. They will soon fall into place once you begin looking at them every morning.

3. Pick your KPI levels carefully and don't be afraid to adjust them.

If you set your targets too aggressively you could end up with a sea of red flags which can be a bit demotivating, especially at the start.

4. Remember to choose or design KPIs that make the daily gathering of data quick and easy.

5. It can take time to get everybody thinking about what they do on a daily cycle so be patient.

We were used to weekly and monthly working, so it took us two or three months to adjust. Persevere. It is worth it. You'll be surprised the difference a daily drum beat makes.

6. Love your Living Pareto chart.

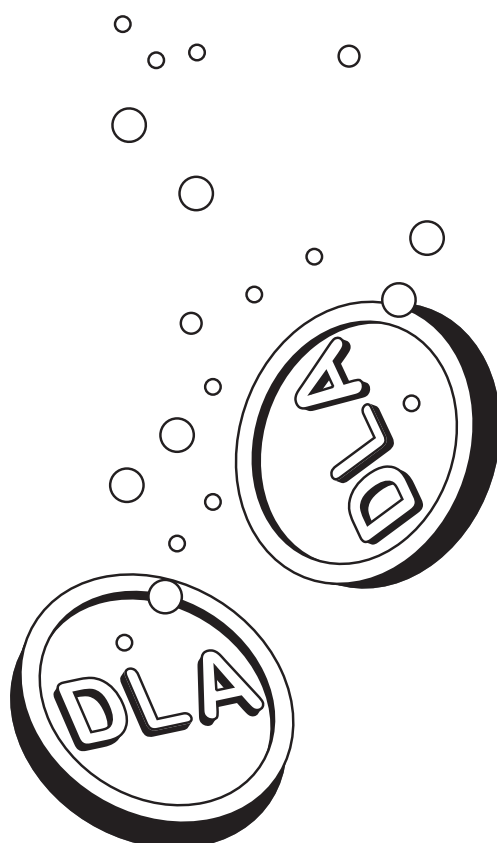
You will be so surprised at how it cuts through your assumptions and preconceptions about a process and shows you what's really causing your problems. Then you can focus on your 'Vital Few'. ■

Rapid relief from LTA headache



Above: Jamie Baxter: DLA works fast when it comes to producing a senior management response.

Jamie Baxter (Strategic Buyer) joined Meggitt Avionics six years ago to work in strategic sourcing. He arrived full of enthusiasm but slowly had to accept that when he needed the support of someone outside his department – which he did five or six times a week – he would have to wait weeks for a response. “That was the ‘norm’,” he says. “They were busy trying to satisfy their own departmental priorities.” Then came Meggitt Production System.



have recently been struggling to get one particular supplier to sign a long-term supply agreement (LTA). They wanted to double the price. The attitude was 'take it or leave it'. They knew we couldn't replace them—it would take years and cost millions to re-qualify—so

and within a few days Mark and I were sitting down with the supplier.

“There and then, Mark was able to discuss the cost changes behind their price rise and to talk about Meggitt Avionics' future demand for the product in terms of our own customers' needs. Without DLA to produce a very quick senior management response that sort of exchange would have taken much longer and required several more meetings to get us to the same place. As it was, the whole problem was wrapped up in a few days and we came away with an LTA based on a much better price. Could that have happened in the past? I very much doubt it. Procurement would have been left to sort it out largely on its own,

They wanted to double the price. The attitude was 'take it or leave it'

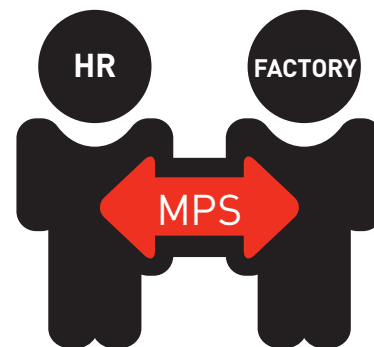
they held all the cards. It was delicate because they are also an important customer. We escalated the problem up through

the whole problem was wrapped up in a few days and we came away with an LTA based on a much better price. Could that have happened in the past? I very much doubt it

the DLA structure. Annette [Hobhouse, Managing Director] immediately involved Mark [Crompton, Operations Director]

management responses would have been much slower and the negotiations would probably have dragged on for months.” ■

In step with the business



When Human Resources Manager, Linda Sear saw what Meggitt Production System was going to do for the Meggitt Avionics factory, she knew immediately that HR should join in.



Above: Linda Sear: MPS has been invaluable in homing in on obstructions and inefficiencies in the recruitment process and engaging the rest of the business in their removal.

The chance was there for every department”, she says. “I felt it was a great

performance and growth of any engineering operation. Meggitt Avionics is no exception, says

provide that for them. And once we had defined the problem we were then able to work with

are often very reactive—which can be frustrating. You might be surprised how frequently

way, says Sear, citing the reactions of her networking group of HR professionals: “I know a lot of people in HR in manufacturing. Their companies have got Lean. And they have got some of these tools. But they certainly don’t extend them to the HR team.”

If the experience at Meggitt Avionics is anything to go by its clear that all support teams should be included, says Sear. “At first, just like everyone else, we

The HR DLA meeting—now in its second iteration—has been invaluable in homing in on obstructions and inefficiencies in the recruitment process and then engaging the rest of the business in their removal

opportunity to follow closely what the business was doing so we would all speak the same

Sear: “It’s usually engineers we are looking for and they are the toughest to recruit.”

Engineering to improve the process,” says Sear.

whole days can be lost under a deluge of ad hoc enquiries and requests. We want to

It’s usually engineers we are looking for and they are the toughest to recruit

The HR DLA process—now in its second iteration—has been invaluable in homing in on obstructions and inefficiencies in the recruitment process and then engaging the rest of the business in their removal. “Two main problems emerged. Right at the start we weren’t getting enough good CVs in from our agencies. Then, further down the line, we were taking far too long to make our offers, especially to engineers.”

Working on the interview-to-offer problem underlined the importance of choosing key performance indicators that improve communications with the rest of the business as well as improving HR’s own internal processes. As a consequence the DLA board is very much a work-in-progress. “We are using complaints as our ‘Quality’ measure,” explains Sear, as she reviews the board’s columns, “and for ‘Delivery’ we are developing a measure based on CV turnaround times. Our ‘Inventory’ is, of course, our workforce and so we are developing a KPI based on new starters. ‘Productivity’ is tricky because by necessity we

exercise more control over the day, so the team is running an experiment. At morning DLA each person states one important action they will commit to getting done that day, whatever else happens, and then we track those actions.”

It’s very rare for an HR department to deploy production-style tools in this

thought ‘how are we going to find time to do all this new work?’ But it’s not extra—it’s just a new way of working. Now, every day at 10 o’ clock we have our DLA. There’s no need to gather up the team. Everyone is fully engaged and keen to participate. They are all there—waiting for me, usually—absolutely committed to it. It really works for us.”

language and understand the same things about how the business is run.”

A nationwide shortage of technical and engineering skills puts HR functions at the sharp end of managing the

The average interview-to-offer time was two to three weeks. Now it’s a maximum of 48 hours. “Engineers want to see good data even if it is an HR process they are looking at. The MPS tools have enabled us to

The ~~AB~~ to ~~ZW~~ of MPS

Glossary of terms

Best practice	Standards for given activity or process which are subject to continuous improvement and thus never more than provisional. As with countermeasures , an improved version (i.e., a better best practice) is likely to emerge at any moment.	Living Pareto	Real-time chart showing real cause of problems. Has reputation for shattering comforting illusions.
Better	Superior objective to perfect	MPS	Meggitt Production System. Proof that a person has not, after all, 'seen it all before.'
Coaching	Management technique aimed at helping another person get best from themselves. Coachee often found to possess valuable experience and insight but mysteriously lacks confidence to deploy them routinely without guidance. Replaces old-fashioned management technique based on shouting and waving of large sticks. See leading .	Myth	Something previously thought of as 'a fact' but now dispelled by living pareto .
Countermeasure	A solution waiting to be improved upon. Term does not mean associated red flag event is done and dusted. An even better countermeasure is likely to be along at any moment.	No-fly zone	Segment of time, not airspace, in which only DLA meetings can take place. Normally found at start of working day. Designed to leave no excuse for absence. People who call non-DLA meetings during no-fly zone can experience intense feelings of loneliness.
Diversion	A necessary production activity, the cost of which cannot be charged to the customer so must be diverted to overhead. The best diversions tackle the root cause of a problem. But even sticking plasters have their uses.	No one	The person who is responsible for something when 'everyone' is believed responsible for it (© Toyota).
DLA	Daily Layered Accountability. Rapid, structured information flows achieved via sequence of meetings focused on production performance. Chairs are sometimes provided but never used. Also: technique for simultaneously empowering participants and demonstrating that what they do each day really does matter. See inverting the pyramid .	Obsession (healthy)	Simultaneously a consequence and a cause of engagement with what you do and how you do it.
Engagement	Personal obsession (healthy) with quality of what is done and how. Not to be confused with immediate pre-nuptial state of being affianced or betrothed.	Perfect	Otherwise known as 'the impossible'. Must not be allowed to get in the way of better .
Gemba	Japanese word which means 'the real place'. Used in Lean terminology to mean 'the place where value is created' or 'where the work is done'.	Processes	What you take care of to ensure that results take care of themselves.
Green day	Everything is on track, in shape, on time. Green flags on a DLA board of KPIs is good – unless there are too many of them. After all, there's no such thing as perfect .	Red flag	Key performance indicator (KPI) off target. Nothing to fear – but room to improve. All red flags point to things that need addressing. But the only 'bad' red flags are those without a countermeasure to keep them company.
Inverting the pyramid	What DLA does. Mechanism by which old-fashioned managers are transported to gemba .	Results	What you get when you take care of processes .
Leader Standard Work	Best practice in leading , using people-based focus on processes rather than results , using techniques such as coaching .	Solution	Archaic usage. Replaced by countermeasure .
Leading	Respectable management technique historically performed impatiently from the front. Now performed patiently, alongside those being led. Modern form relies heavily on coaching .	S, the 7th	'Stuff' or 'shovel'. As in: "You can't do 6S 'til you've shovelled out all the [old] 'stuff' first". © Mark Crompton. NB: usage can be vulgarised.
		Vilfredo Pareto	The man who gave us Pareto Principle (80/20 rule) – 80% of effects tend to come from 20% of causes. In 1906 Pareto noted that 20% of people owned 80% of Italian land. Also discovered that one-fifth of all pea pods produce the bulk of all peas. Died 1923. Did not live to see invention of living pareto .
		Vital few	What Vilfredo Pareto has pointed at for more than a century. The few things that cause most problems. Identity of <i>Vital Few</i> changes with time and continuous improvement activity. Concentrating on them is always the best route to biggest gains in shortest time.
		Work in progress	Life and all its sub-assemblies (including MPS).