

Lean Engagement of the Workforce: **THE MOONSHINE CONNECTION**



I'm Vince Stamper, and this is Pete LaketaFirst, I want to dispel a notion that seems to have gained popularity since I was a kid. The notion is that Innovation only happens in the private sector. It doesn't bear much scrutiny, like for instance, putting a man on the moon, but it certainly has given those of us who choose public service a complex.. I have always known better, because I watched my father, Lon Stamper. After graduating Central, a teaching job in Forks. then Vashon, then Yakima. He took a job in Seaside OR. Not only was that a good choice from a retirement perspective, but professionally he had peers, and more importantly a principal, who were willing to collaborate, and do some experimentation. After a year or two of faculty room talk, Mr. Degandi asked my father, "Lon, what would it take to make this idea happen?" It was a simple idea. Combine classes to give each teacher more prep time, make the learning self paced and collaborative in small group settings, with testing to move up to the next level. The results were phenomenal. By the end of the year, every student was testing at or above the next grade level, and this from a group who at the beginning of their fifth grade year tested one to three grade levels below. Newspaper articles were written, accolades given, and then politics, the inconvenience to their peers of being too successful, and time made it fade away. The thing that makes it still relevant, the thing that made it work, is what makes Moonshine work. Give the students, give the employees, ownership, the resources, environment and the processes to learn and share, and in time they will succeed. They will innovate. In

these times, government cant be too successful. We cant afford to be anything but.

Now before we move to the next slide, I'm going to turn it over to Pete, because he has a relative in one of these two pictures.....

WHAT is Moonshine?

moon-shine (mōon'shīn') *n.* 1. A Lean methodology that uses **fast and inexpensive prototyping** to develop and prove a concept, prior to full design, engineering, and implementation. 2. A method of **thinking and action**, using Lean 3P techniques to accelerate learning and innovation, producing **order-of-magnitude** improvement to any process.



Today's moonshiners partner with employees to prototype new ideas and test solutions to problems

Back in the 1920's, Moonshiners would build the equipment needed from any available materials, despite the current bureaucracy of society!

Pete's story of how the name Moonshine came about- Boeing, Shingijutsu, starting Moonshine at Boeing, etc.

Why Moonshine?

It's Already Happening

Creative and frustrated employees will always look for ways to improve, even if they have to use the solutions in secret. Creating a "Safe to Fail" system engages more stakeholders, promotes sharing, and gives hope.

Adapt and Thrive

Technology and culture are changing too rapidly not to engage with all of your process owners. Making a habit of solving small problems today, will give your organization the tools to confront the radical unknown tomorrow.

Human Potential

By not tapping the creativity of your team, you are not taking your War on Waste to its full potential.

**Moonshine creates the infrastructure needed for innovation
(funds+resources+location)**

Shop 51 waterfront electricians end up running a lot of cable into cabinets. Once the cable is routed, the casing needs to be stripped back so that the individual strands can be run to the different bus bars, circuits and or connections. The casing must be cut back carefully so that the insulation of the individual wires inside is not cut or damaged. This can be tedious and time consuming work, but there was one mechanic on backshift that could do it three to four times faster than anyone in the shop. Everyone got in the habit of pulling cable during day shift, and then leaving the stripping to this mechanic on backshift. When he wasn't there, it could take three or four shifts to finish this task. As he neared retirement, everyone was getting a little nervous, until he pulled one of the junior electricians whom he had befriended aside and shared his secret. It was an orange peeler. Now, you can still buy these, but nowadays they were made out of plastic. But in the 1950's they were made out of metal, and he had acquired one of these from his kitchen drawer, and sharpened it, and that was his secret sauce. This modified tool was brought to our lab, and we were asked to replicate it, which our toolmaker did, with replaceable roofing blades. We also identified some commercial alternatives.

The problem is that under the old culture innovation happened, but it, like a lot of knowledge in less than optimal cultures, was in pockets, and kept secret.

Technology has enabled things thought impossible in our organizations, and it has also made our systems

much more complex. Not only are these changes a constantly moving target, but they make it nearly impossible for an individual, or small group, to be successful, without looking networking and sharing with those inside and outside their field. We are not going to manage complex systems with more experts. Complexity can only be managed with networks of people collaborating to solve problems, and communicating what they have learned to solve ever more complex problems.

We can no longer afford to ignore the eighth waste, untapped human potential and creativity

**Moonshine is a “Try *Before* You Buy” capability
(aka Try-Storming vs. brainstorming)**

Do everything to simulate, test and experiment before committing to any solution.
The *PHYSICAL* nature of Moonshine creates ideas previously impossible to attain.



LEARN BY DOING!

Building your Program

Leadership Buy-in

Take your leaders to benchmark other programs. Identify a Senior Champion, develop a charter, and pilot your first lab.

Attitude

Moonshiners who are willing to listen and build trust aren't necessarily more clever, they are just a better fit.

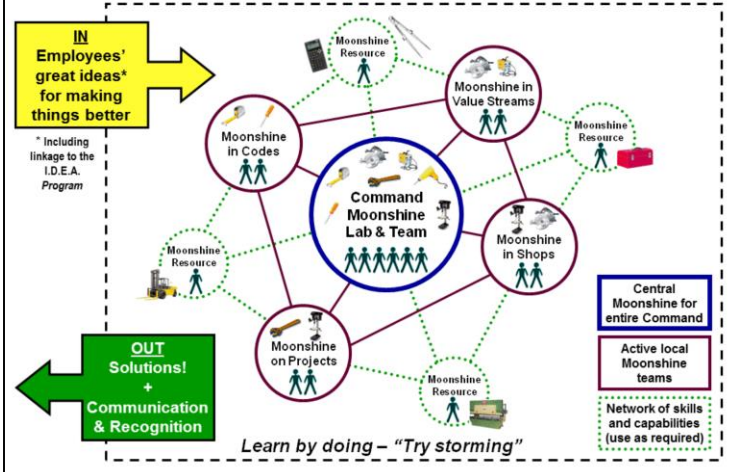
Align to your Mission and Values

Consider what capabilities you need to build or leverage to make your system responsive to the specific needs of your core workforce and mission.

Don't Become the Workaround

Your ability to work around bureaucracy cannot become a relief valve for bad processes or necessary safeguards. Honor other components within your organization by defining when to pass efforts on to them, and when to partner with them!

Command Moonshine System Vision



Moonshine Objectives

Focus on Changing Culture, not ROI

Develop people and systems that foster ownership and critical thinking. Solutions are an indicator of a healthy system, not the end result. Don't give them fish; teach them to fish.

Partner with all your Stakeholders

Establish formal agreements with Safety, Engineering, IT, Security, Facilities, and other technical authorities and programs.

Define the Sandbox

Negotiate how much room you have to experiment, with formal processes for concurrence when working beyond these boundaries.

The Consult

Don't Jump to Solutions

Observe the process where it will be performed and have the Process Owner walk you through it. Ask to talk to other stakeholders and avoid deferring to management.

Partner and Collaborate

Stakeholders must be willing to discuss alternative solutions, even if the one they already have is perfect.

At IMF Bangor, we have begun to insist that at least one of the end users be involved in the actual build. This does two things, it builds a surge capacity into the system in which the end user, when workload allows, provides some of the labor capacity, but perhaps more importantly, it ensures that the solution fits their needs and expectations, and that they the end user understand why it was built that way, and how and what can be modified, and they have the knowledge to do the modification themselves.

One of the original moonshine team, Kevin Berg, took a promotion to become the toolmaker apprentice instructor. This was a new position, and as a result his classroom was put together with desks and fixtures he had obtained second hand. He engaged his students in a discussion about what the ideal learning environment would look like. The problem was that the lab we had set up had a large backlog of projects that were in support of actual production work, and it would be several months before we would be able to build his. I suggested his students come into the lab and build the fixtures themselves, and after some planning, we set a date, brought them in on a Tuesday (it had been a holiday weekend,) and gave them a safety brief, and some initial training. By that afternoon they were on a roll, and by Wednesday afternoon they had finished all seven fixtures. We out briefed them to see how we could improve for the next group, and sent them back to set up their classroom. A couple weeks later they stopped by to cut a couple of pieces, and pick up a few extra brackets to make some modifications, and they have been back several

times over the last couple of years for additional mods, and new projects, and need little or no help completing them.

Try-Storming Basics

Don't Reinvent, Exapt

Solve the problem with available solutions first. Modify or customize if needed. Look outside your community for things that can be used in new ways.

Design for Function, then Simplicity

Make it work, then simplify to make it repeatable and easy to use.

Today's Solution, Not Tomorrow's

Building trust with your Process Owners includes not pushing them too far out of their comfort zone

Hay loader story.

There was a toolmaker at Puget Sound Navel Shipyard whose brother was literally a brain surgeon. They would discuss the lack of certain tools to do some of the cutting edge and experimental surgeries, and thus, the toolmaker brother began prototyping tools the two of them would brainstorm together, out of surgical stainless steel. It turns out that the human body is very similar to a lot of the mechanical and hydraulic systems the toolmaker brother was used to designing tooling for, the only real difference being scale. This is yet another example of extracting knowledge from one discipline, and adapting it to a seemingly unrelated field.

When prototyping, the first stage is to make it work, then worry about simplifying it to be practical. If the initial design can be mocked up in cardboard, plywood, or some cheap materials that can allow it to be tested before committing to an idea, then it will be much easier to scrap an idea that you have not invested in heavily. We were asked to make a open end wrench tool, to work on seawater seats, and first made it out of aluminum, which we filed and modified at the worksite, and then cut a prototype in $\frac{3}{4}$ inch mild steel, which we could actually apply torque to. In the process we made it so that a one inch drive ratchet could be used, allowing adjustment of the leverage angle. After this was actually used for the task, we had the toolmakers replicate it in hardened tool steel. You learn by doing, and that is what makes try-storming so

powerful

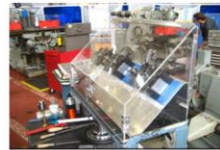
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Adaptable Backpacks



Visually Designed Tool Applications



Flexible Construction Point-of-Use Applications

Visual workplace can be taken mobile also. Left and middle are a backpack version with removable panels, to allow one shell to support multiple jobs by changing out the panels. On the upper right is a pelican base tool organization system for Nitrogen freeze seals, which not only allows onsite use with heavy gloves, but also makes making the kit ready for reissue when it comes back from a remote site easy.

The blue cart is a small parts kitting cart used to build the kits that go on the cart on the right, and is a great example of learn by doing. The kitting people put it together with parts from a previous prototype, and then used for several days, making changes with duct tape and cardboard, until they had a working cart. After further modifications, this cart was finished with stainless and lexan.

The middle cart is for kitting of a breaker, and at any given time, a dozen kits are being assembled to be pulled into the breaker assembly cell.

The last was built by an apprentice, who had done a tour in the lab as a new hire. I came into the lab one day, after having not seen him for almost a year, and he had persuaded his supervisor to let him come up and build the tool storage and cover on the right.

Promote Principles

Workflow

Your Moonshiners need training in Core Lean Principles. 5S and Cellular flow should always be built into the solution. Green Belt Certification is a good start.

Ergonomics/Safety

Use the process to educate and mitigate risks. Eliminate unnecessary risks such as lifting, and design guarding that is easy to use, even when nobody is watching.

Visual Workplace

Close information gaps, and communicate expectations and knowledge needed to be successful.

Bagging peanuts at CB's. Office workflow- Job readiness cell to prepare work documents. Shop 67 test rack chair. Floyd Sawyer/ Boeing tool story. Shadowboard tool story

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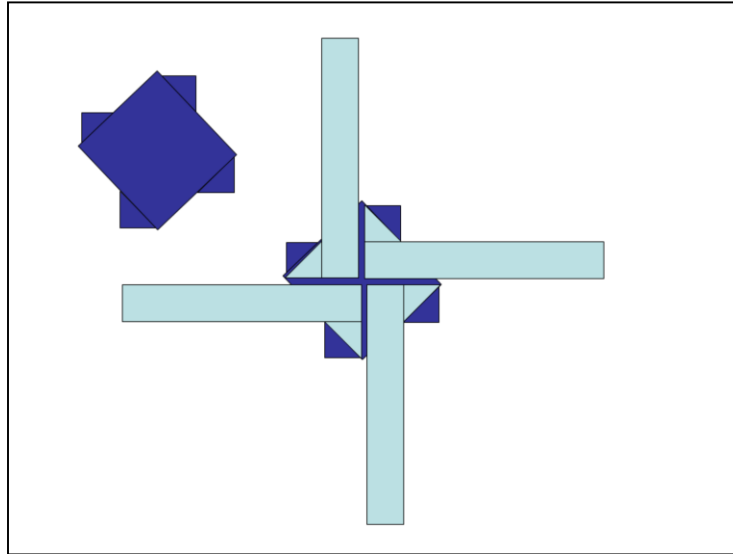
Reconfigurable employee break area. This building is on the Historic registrar, and will be undergoing seismic upgrades over the period of two years, while continuing to be a production workspace. By building this area, and other work and training enclosures out of a modular panel system, they can be easily relocated and reconfigured when this area is disrupted by construction.

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A zero-G arm, exapted from the motion picture industry where it is used for portable steady cam rigs, carries the load of an ultra high pressure hydro-blast rig. This reduces operator fatigue, and adds to the dexterity of the user.

PSNS and IMF was the very first industrial worksite public or private, anywhere in the world, to bring an Exoskeleton/ Human augmentation into an industrial work environment. We have continued to work with outside vendors to develop this technology, and as a result, have already implemented solutions, such as the heat induction overhead rig on aircraft carriers to tank work. Ron Zmijewski is the lead on this development and ergonomic and safety trials, and has brought a vest version to demo the concept.



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