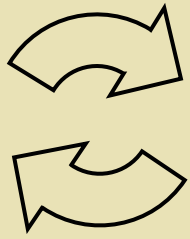


A corkboard with several military medals and a compass. The medals include a red ribbon medal, a blue ribbon medal, and two silver star-shaped medals. A pair of glasses is also visible on the corkboard.

Lean Training Ideas for TECOM

The Marine Corps needs *more* training time.

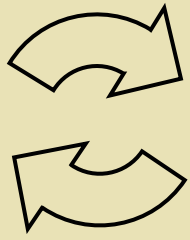
Industry best practices can improve our training pipeline.



What is *Lean*?

- ◆ At MIT in 1988, Dr. James Womack defined Toyota as a “lean” company.
- ◆ Lean is a discipline to improve complex processes: deliver value and eliminate waste.
- ◆ Lean uses the *least* resources to accomplish the mission.
- ◆ Lean eliminates *waste*. Wasted time, space, effort, money, people, and facilities.
- ◆ **The Marine Corps has always been lean.**

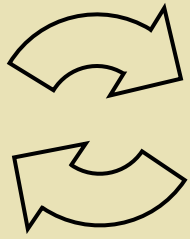




Seven Types of Waste in Manufacturing

1. Transportation Unnecessary transport of parts under production.
2. Inventory Parts waiting to be worked on. Products waiting to ship.
3. Motion Unnecessary movement of people to work on parts.
4. Waiting Unnecessary waiting by people to work on parts.
5. Over-Processing Unnecessary steps and features added to products.
6. Over-Production Excess amounts of products.
7. Defects Errors in products.





Seven Types of Waste in TECOM

1. Transportation Unnecessary transport of students.
2. Inventory Students waiting to learn.
Students waiting to ship.
3. Motion Unnecessary movement of instructors.
4. Waiting Unnecessary waiting by instructors.
5. Over-Processing Unnecessary activities.
6. Over-Production Excess amounts of students
7. Defects Undertrained students.





(5) Lean Principles Reduce Waste

1. Specify Value

2. Identify the Value “Stream”

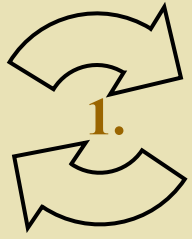
3. Flow

4. Pull

5. Pursue Perfection

Dozens of techniques support each principle.



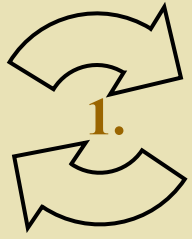


What is Value?

Value = The Voice of the Corps

- ◆ What type of Marine do we need?
 - What does our school need to teach?
 - What do our students need to learn?
- ◆ Value can *only* be defined by Marine units.
 - Value is distorted by training organizations, narrowly-focused experts, and instructors.
- ◆ Capturing input takes effort.
 - How well do our Marines meet unit needs?
 - What needs are *not* being met?
- ◆ POI may not meet unit needs.

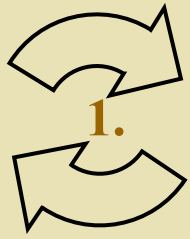




Identify Value in the Pipeline

- ◆ Every TECOM school is a series of processes
- ◆ All processes exist to increase Marine training
- ◆ Value is created by each process. But...
 - Some processes are duplicative
 - Some processes add value
 - Some processes do NOT add value

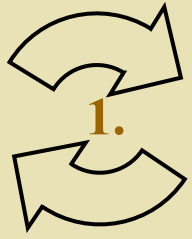




Some Processes are *Value-Added*



	Value Added	Non Value Added	
◆ Sleeping		√	(8) hours per day
◆ Eating		√	(2.25) hours per day
◆ PT	√		
◆ Drill	√		
◆ Free Time		√	(1) hour per day
◆ MCMAP	√		
◆ Haircuts		√	
◆ Instruction	√		



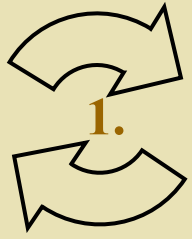
Define *Value-Added*

- ◆ The customer – our units – really *wants* it
- ◆ The activity *transforms* the recruit
- ◆ The activity is done *correctly* the first time

Define *Non-Value-Added*

- ◆ NOT valued by our Corps or our units
- ◆ NOT transforming
- ◆ NOT correctly done

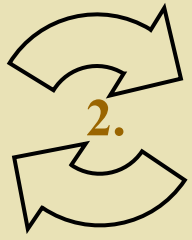




Find Non-Value-Added Processes

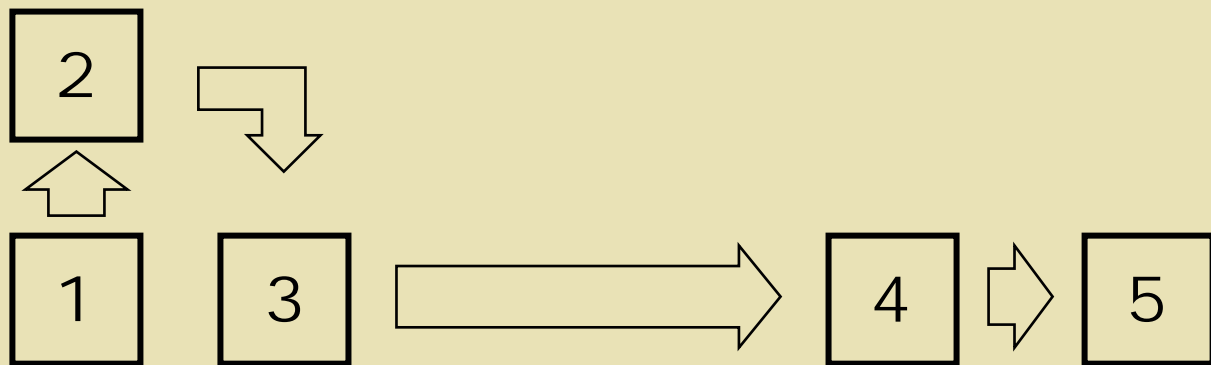
- ◆ Some *seem* important:
 - Admin, Legal, Reports, Approvals, Testing, Inspections
- ◆ Some are needed:
 - Sleep, Chow, Free Time, Medical, Testing
- ◆ Some are waste:
 - Transportation, Waiting, Movement

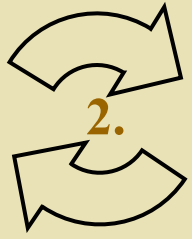




How Can We “See” a Process?

- ◆ **Draw a Map:** everyone *sees* the process.
- ◆ Close the circuit: Steps move toward completion, information moves back.
- ◆ Draw an ideal state. Draw a future state.
 - Combine steps. Eliminate steps. Change steps.

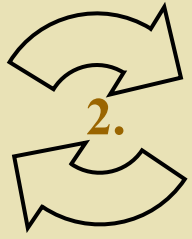




Training Process Maps

- ◆ We think we know a process until we try to draw it:
 - 50% Non-Value-Added activity is not shown.
 - Maps show complexity and redundancy.
- ◆ “Go and see.” Observe the process. Invisible work *cannot* be improved.
- ◆ *All* processes can be improved.
- ◆ *Every* process should add value.

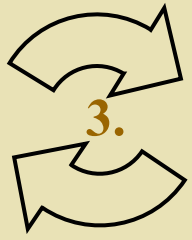




What is a “Perfect” Process?

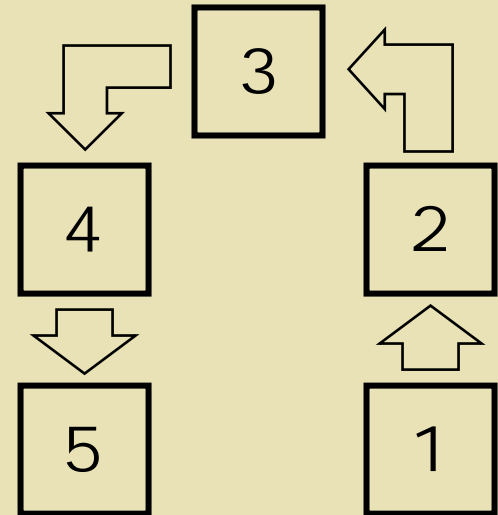
- ◆ *Valuable*: “Does this step add value? If we deleted this step, would the Corps miss it?”
- ◆ *Capable*: “Does this step produce the same quality result every time?”
- ◆ *Available*: “Can this step be performed every time it is needed?”
- ◆ *Adequate*: “Is there enough capacity to perform this step without waiting?”
- ◆ *Flexible*: “Can the step quickly change from doing one activity to doing another?”

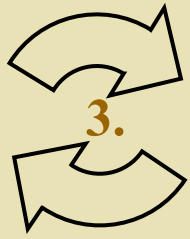




What is Flow?

- ◆ Flow is near-continuous processing.
- ◆ No stops. No waiting between steps. No delays. No excess transport between steps.
- ◆ No storage between steps. No inventory buildup.
- ◆ In manufacturing, most wasted time is waiting for the next machine, the next specialist.

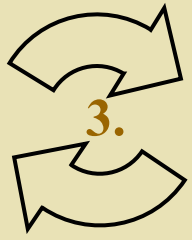




What is a Monument?

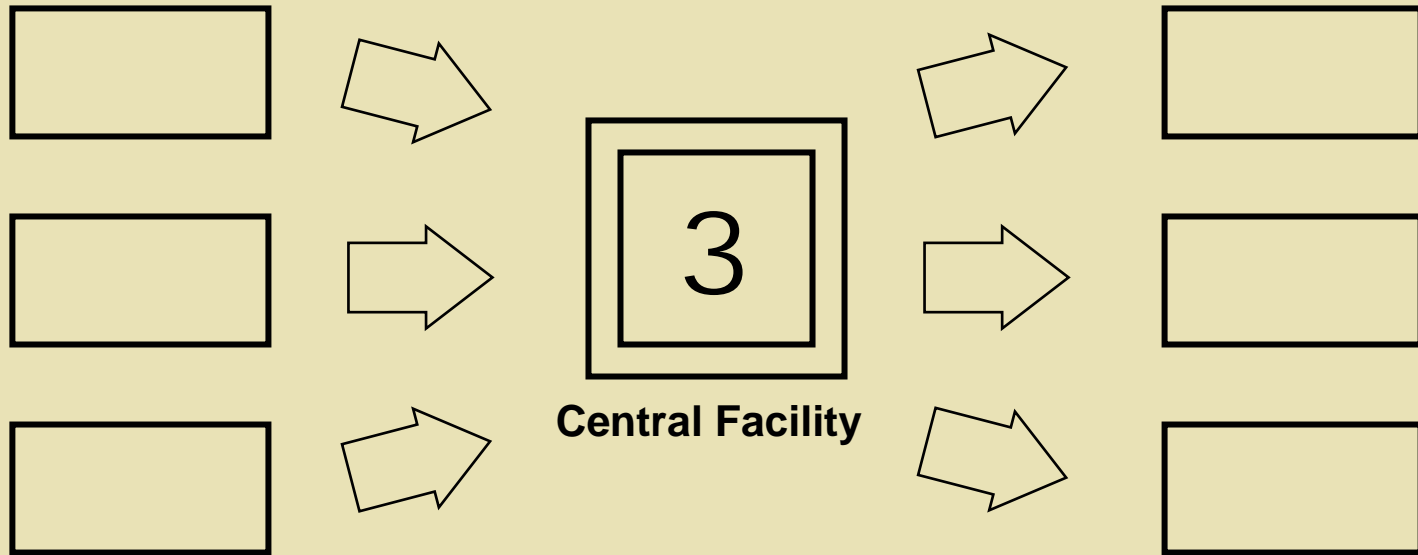
- ◆ A “monument” is a large centralized facility used by multiple units & multiple processes.
- ◆ Monuments prevent flow and create waste: Poor layout causes excess transport and waiting, excess scheduling and coordination.
- ◆ Monuments create inventory backup.
- ◆ Flow requires multiple right-sized facilities, not large, centralized facilities.
 - Large is more efficient but less *effective*.



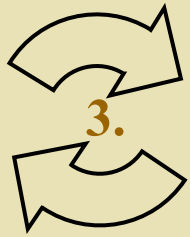


Flow is Stopped by a Monument

Training Units

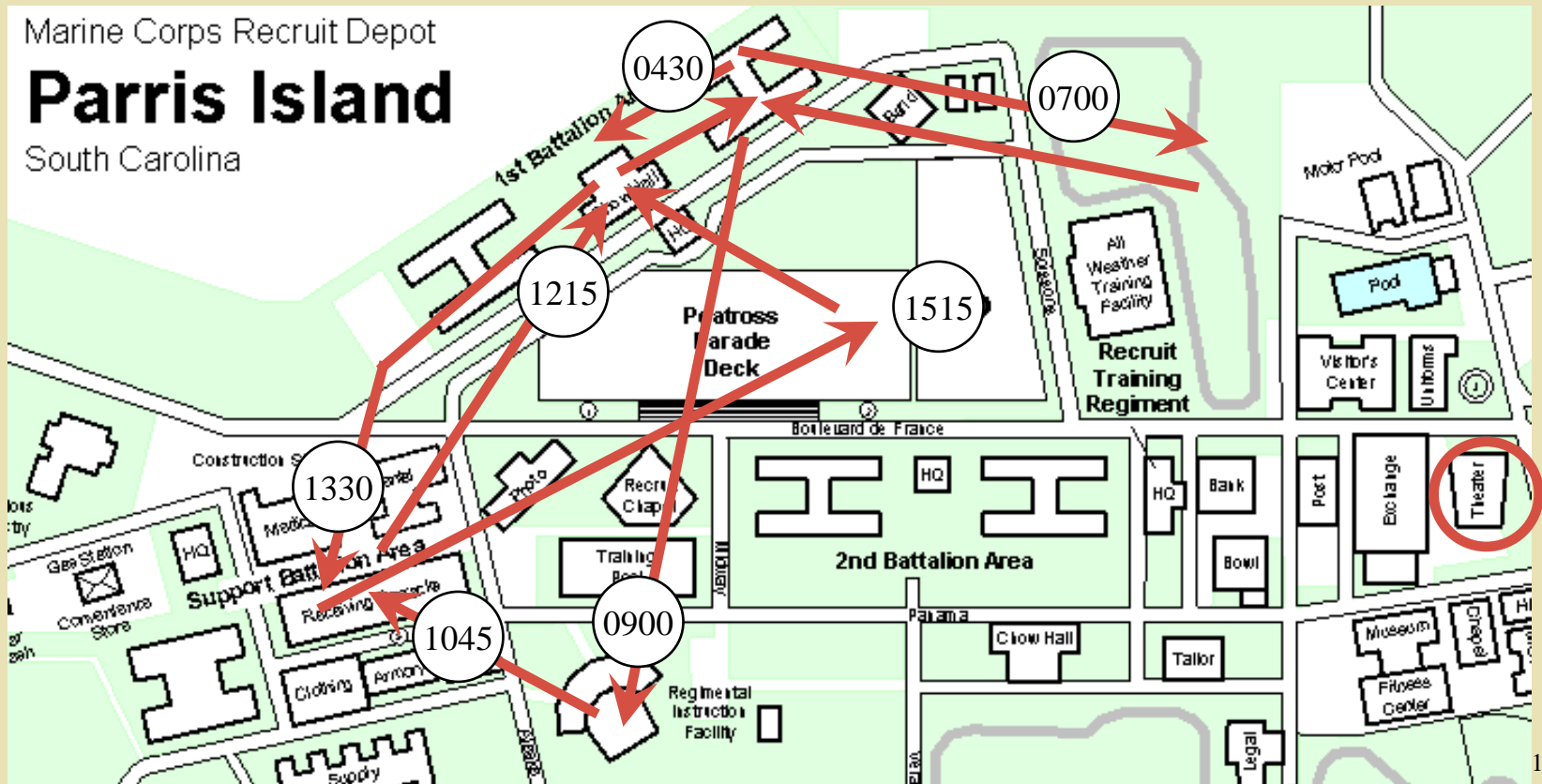


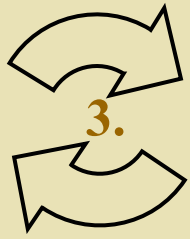
- ◆ Transport. Wait to get in. Wait for instruction. Transport.
- ◆ Scheduling. Conflicts. Communication. Seat restrictions. Support requirements. Instructor availability.
- ◆ The *monument* sets the schedule and the standards!



All Transportation is Waste

- ◆ Moving and Transporting students is waste
 - Distant central facilities *increase* movement
 - Poor schedule practices *increase* movement



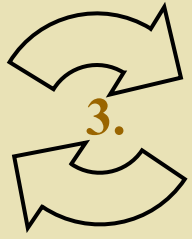


Flow at TECOM

- ◆ Students waiting for the next event...
- ◆ Students waiting during the event...
- ◆ Central monuments training large units...
 - Wait before, wait after, wait during
 - Increase movement times
 - Schedule inflexibility and conflicts
- ◆ Flow requires local control: cross-trained instructors and facilities are always capable.
- ◆ Flow reduces tight scheduling requirements: cut hand-offs in half, cut wait time in half.

Is Not Flow!

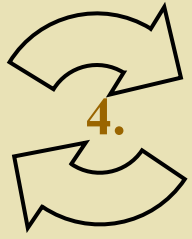




Complexity is the Enemy of Flow

- ◆ Complexity adds time, effort, and errors.
- ◆ Complexity increases training requirements.
- ◆ Reduce process complexity.
All processes should flow.
Tight, fast processes are best.
- ◆ Standardize all tasks.
Simplify all schedules.
Shrink class size. Increase repetitions.

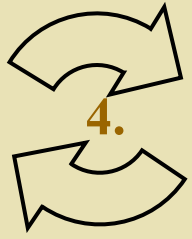




Pull

- ◆ “Take one, make one.”
- ◆ Wait until one is needed, then produce another one very quickly.
- ◆ Every process should operate on a pull basis. Execute only when needed.
- ◆ No one upstream should produce anything until the next step downstream asks for it.
- ◆ Pull requires universally visible information sharing across the organization.





Pull at TECOM

- ◆ Who retired today? Who was wounded?
- ◆ What signal was received by the entry-level training process?
- ◆ Within the pipeline, what signal was received upstream to continue to produce?
- ◆ TECOM overproduces *throughout* the system because of a lack of information.
- ◆ Do not put Marines in a wait status: T2P2. Excess barracks and supervisors are wasted.






Pursue Perfection

- ◆ Continuous Process Improvement: “Don’t let a day go without improvement.”
- ◆ If you see “re-” in front of a process, it’s a candidate for waste elimination.
- ◆ Standardized all work.
- ◆ Do not pass along defects.
- ◆ Flow: “Do all steps occur in a continuous tight sequence with little waiting?”
- ◆ Pull: “Does each step only occur at the command – the pull – of the next step?”






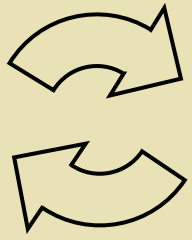
What is To Be Done at TECOM?

- 
1. **Train everyone to see waste.** Train leaders on Lean.
 2. Define value. Survey OpForces to define what training is needed. Re-write T&R / POI.
 3. Map entry-level training. Find duplicity. Find waste.
 4. Improve facilities: multiple smaller facilities.
 5. Train leaders how to *schedule*: smaller classes more often.
 6. Cross-train instructors for more flexibility
 7. Document all processes with SOPs. Go and see.
 8. Flow. Simplify complex processes to save time & effort.
 9. Pull. How many Marines are needed down the pipeline?
Share real-time information across all schools.
 10. Do not pass along undertrained Marines.
 11. Use new-found time to *increase* training.



What is To Be Done at PISC?

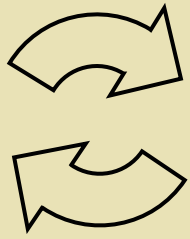
- 
1. Define *value*: “What is a Marine?”
Is NAVMC 3500.18 MCCS what we want?
Ask the OpForces: what are we *not* delivering?
 2. Draw each training week. Find wasted time. Cut movement. Cut non-value added processes.
 3. Flow. Simplify processes. Rationalize facilities use. Right-size facilities.
 4. Schedule *platoons*. Unshackle platoons from companies. Reduce class size to reduce wait time and increase unit leader responsibility.
 5. Cross-train instructors. Maximize DI skills.
 6. Use new-found time to *increase* training.



The Marine Corps is Fortunate

- ◆ The Marine Corps trains one product: Marines. Zero color, model, or material changes. Zero order changes. Zero set-up times. Zero changeover times.
- ◆ The Marine Corps has:
Zero fear of job loss. Zero unions.
Zero labor issues. Zero salary disputes.
Zero hourly workers. Zero overtime.
- ◆ The Marine Corps already has a lean culture of team players. Zero individualism.





USMC Glossary

Use heritage language and terminology



- ◆ Batch size Class size or unit size
- ◆ Inventory Student load
- ◆ Monument Central Facility
- ◆ Standardized Work SOP
- ◆ Batch and Queue Hurry up and Wait
- ◆ Value Stream Training Pipeline
- ◆ Wait time Wait time
- ◆ Defects Undertrained Marines
- ◆ Waste Waste



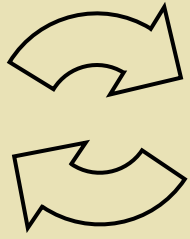
People Improve the Process

“We get brilliant results from average people managing brilliant processes.”

“Others get average results from brilliant people managing broken processes.”

**“Don’t search for brilliant managers.
Perfect your processes.”**





References

- ◆ *Lean Thinking*
by James P. Womack and Daniel Jones
New York: Simon & Schuster, Inc., 1996, Second Edition 2003
- ◆ *Lean for Dummies*
by Natalie J. Sayer and Bruce Williams
Hoboken, NJ: Wiley Publishing, Inc., 2007
- ◆ *Lean Six Sigma for Service*
by Michael George
New York: McGraw-Hill, 2003

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