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- “Why doesn’t every company use ESDs effectively? Because ESDs drive bureaucrats nuts, for two main reasons: 1. ESDs trust their own judgment and love their own vision, and when these get off track, they can be disastrous. 2. ESDs won’t play the game; good bureaucrats do. Bureaucrats are properly deferential to authority. They mingle well at parties.”
- “Committees never do anything completely wrong, but they never do anything brilliant either.” – Kelly Johnson
- “We should buy both design and make whenever we can. Why? Because it reduces the amount that we have to learn.” – Allen Ward in “Lean Product and Process Development”.
- “As a pilot instructor would say, 'Relax and level the wings.' In other words, stop doing those things that make the situation worse and take measured corrective action; which is, in this case, value-stream alignment.” – Allen Ward in “Lean Product and Process Development”.
- “Quality, timing, and design integration are strongly interactive properties, not isolated ones. Interactive properties have more effect on profit than isolated ones.” – Allen Ward in “Lean Product and Process Development”. And related:
- “A good system designer will rarely choose the supplier with the lowest price, even if cost is important to the product. Price is an isolated property of the part. It has little effect on how the part works in the system as a whole. Suppose a part involves 10% of the cost of the product—increasing the part cost by 10% will increase the product cost by only 1%. The effect is isolated. Conversely, if the part fails in service, the whole product fails. If the supplier delivers the part late, the whole product is late. If the part design doesn’t fit well into the system design, the customer is likely to be dissatisfied with the whole system.”
- “In summary, these wastes are: 1. Scatter: management actions such as reorganization and workload variation that make knowledge hard to get to the right place; barriers to communication, such as the use of multiple forms (paper or electronic) to carry information through channels; and poor tools, which most often generate information that would have been useful in preventing a past problem but do not prevent future problems efficiently. 2. Hand-off: the most critical waste, occurring whenever a company separates responsibility, knowledge, action, and feedback; useless information, usually generated to provide management with the illusion of control; and waiting, the practice of putting learning into batches so that knowledge flows in only one direction. 3. Wishful Thinking: making decisions without data; testing to specifications, which leaves the product vulnerable to problems too infrequent for the specifications to catch; and discarded knowledge, which is the failure to put everything learned during a project into usable form.” – Allen Ward in “Lean Product and Process Development”.
- “Testing’s job is to break the product, record how it breaks, and advise design engineering on how to make it harder to break.” – Allen Ward in “Lean Product and Process Development”.
- “The natural intuition is that looking at one alternative is cheaper, easier, and faster than looking at multiple alternatives. This intuition is usually wrong, because looking at a lot of alternatives early is usually cheaper than looking at a few alternatives later; and choosing the one alternative, if we must do it with little knowledge, is simply wishful thinking.” – Allen Ward in “Lean Product and Process Development”.
- “My job is to keep people from making decisions too quickly.” – Senior manager at Toyota
- “It’s hard to find a development upstream process that has to finish before a downstream process can start. This is a major difference between development and manufacturing, and between development and construction (the environment for which PERT was designed).” – Allen Ward in “Lean Product and Process Development”. And related:
- “Sequencing creates a batch process in which all the decisions and learning of a particular kind happen at once. This: 1) Slows the process because people wait longer than they need to before starting. 2) Creates one-way rather than multiway information flows; the upstream processes don’t

get enough input from the downstream processes. 3) Gives the upstream developers more power than the downstream, creating quality problems. 4) Causes large variations in workload, which in turn causes scatter waste."

- "What is the most fundamental waste in conventional companies? Hand-off … A hand-off occurs whenever we separate knowledge, responsibility, action, and feedback. Hand-off is a disaster because it results in decisions being made by people who do not have enough knowledge to make them well or the opportunity to make them happen. Similar to the waste of overproduction on the plant floor, hand-off tends to produce many other kinds of development waste" – Allen Ward in "Lean Product and Process Development".
- "Hand-off creates finger-pointing—the conventional management salute." – Allen Ward in "Lean Product and Process Development".
- "The most important wastes in development are wastes of knowledge." – Allen Ward in "Lean Product and Process Development".
- "There are three primary categories of knowledge wastes: scatter, hand-off, and wishful thinking" – Allen Ward in "Lean Product and Process Development".
- "Scatter often is a death spiral, a feedback loop that makes things worse and worse. As things "fall through the cracks" because of disorganization, developers spend more time "fighting fires," responding to demands for information by others, and looking for information and harassing other developers to try to get action. Everything becomes a crisis" – Allen Ward in "Lean Product and Process Development".
- "These responses to scatter create more scatter. The result: more time spent creating waste and less time creating value." – Allen Ward in "Lean Product and Process Development".
- "Going faster improves profitability in several ways: 1) Saving time saves money. The size of a team is determined mostly by the range of expertise required. Getting done faster frees resources. 2) In markets with low switching costs for the customer to change from one supplier to another, going faster means you get your share of the market sooner. You probably keep it just as long, so you add some months or years of profit to your ROI. 3) In markets with high switching costs, getting to market first could mean you get most of the market—and you get to keep it. 4) If you are selling to industrial customers that are in a hurry themselves, the promise of speed may be enough by itself to radically improve market share and ROI. 5) Above all, of course, going faster means learning faster. If you learn 20% faster than your competitors, 30 projects later you will be 60% ahead—a tremendous advantage." – Allen Ward in "Lean Product and Process Development"
- "Estimate value-creating time for developers. Ask your developers (anonymously, at least at first) what fraction of their time is spent creating value—creating usable new knowledge or manufacturing hardware. Calculate how much you could increase your throughput by increasing your fraction of value-adding creating time. Publicize." – Allen Ward in "Lean Product and Process Development"
- "Almost all defective projects result from not having the right knowledge in the right place at the right time. Therefore, usable knowledge is the basic value created during development. Usable development knowledge prevents defects, excites customers, and creates profitable operational value streams." – Allen Ward in "Lean Product and Process Development".
- "Usable knowledge is created by three basic kinds of learning: 1. Integration learning includes learning about customers, suppliers, partners, the physical environment in which the product will be used, etc. It helps us understand how to integrate our designs with the needs of others—most importantly, our customers. 2. Innovation learning creates new possible solutions. 3. Feasibility learning enables better decisions among the possible new solutions, avoiding cost and quality problems, or project overruns." – Allen Ward in "Lean Product and Process Development".
- "Keep the ROI model simple enough for developers to understand and use in daily work." – Allen

Ward in “Lean Product and Process Development”

- “Improving the system to prevent defects does NOT mean adding more tests, analysis, signatures, gates, or controls to the system. These things make developers work harder, in an effort to prevent a particular problem from reoccurring. But the basic problem is that every developer I know already is working too hard, so things “fall through the cracks.” Improving the system means making things easier for developers, not harder.” – Allen Ward in “Lean Product and Process Development”
- “Use project defect rate to spur change Determine your project defect rate. To do this, plot the distribution of ROIs for recent projects, color coding for defective and completely successful projects. Compute how much more money you would make if all projects returned the maximum ROI. Publicize this in internal media, or post it in halls; use it to agitate for lean development.” – Allen Ward in “Lean Product and Process Development”.
- “Unless you keep spreading the virus, the immune system of the organization will reject it.“ – Allen Ward in “Lean Product and Process Development”
- “While we acknowledge emergence in design and system development, a little planning can avoid much waste.” – James Coplien
- “It is said that a wise person learns from his mistakes. A wiser one learns from others' mistakes. The wisest person of all learns from others' successes.” – John C Maxwell
- “Every dependency you can remove from your delivery stream doubles your chances of delivering on time.” – Troy Magennis.
- “For high utilization systems we need to track system level impediments to the flow.” – Troy Magennis
- “Its impossible to forecast a system under high utilization” – Troy Magennis. High utilization means non-linear effects become part of the system which means you cannot estimate.
- “A symptom of over-utilization in a system is high batch size” – Troy Magennis
- “If the system is so over-utlitized then you might as well send a truck through the system as a car, as you'll end up with more at the end.” – Troy Magennis
- “A bad system will keep a good developer down.” - Troy Magennis
- “Note - these are just ideas / approaches. If the approach does not suite your context, believe the context, and adjust the approach” – Hans Samios
- “Scope doesn't creep. Understanding grows.” – Jeff Patton
- “Caution! Support organizations should support, not control. All too often, they optimize their work and make decisions that should be made by people who work on products. By taking this responsibility away from Scrum teams, the support mutates into a burden. Make sure to focus on support” – Craig Larman, Bas Vodde from “Scaling Lean and Agile Development”
- “Part-time people equate to part-time commitment. Part-time commitment leads to team failure” – Jensen
- “The sooner you get behind schedule, the more time you have to make it up.” – Anonymous
- “2B | ¬2B, that is the question” – Hamlet, early hexadecimal programmer
- “Plus, research [Katz82] shows that long-lived stable R&D teams are correlated with higher productivity than temporary project groups of people drawn from a resource pool” – Craig Larman, Bas Vodde from “Scaling Lean and Agile Development”
- “The most powerful form of 'queue management' is to utterly eradicate a queue by changing the system.” – Craig Larman, Bas Vodde from “Scaling Lean and Agile Development”
- “Humans are probably more sensitive to time variation than to scope variation — 'It was late' is remembered more strongly than, 'It had less than I wanted.'” – Craig Larman, Bas Vodde from “Scaling Lean and Agile Development”
- “Time-boxing limits scope creep, limits gold-plating, and increases focus — one of the Scrum

values." – Craig Larman, Bas Vodde from "Scaling Lean and Agile Development"
- "Simply, cadence at work improves predictability, planning, and coordinating" – Craig Larman, Bas Vodde from "Scaling Lean and Agile Development"
- "Focus on large-scale test automation — to learn about defects and behavior. The setup costs are non-trivial (if you are currently doing manual testing) but the re-execution costs are almost zero." – Craig Larman, Bas Vodde from "Scaling Lean and Agile Development"
- "Self-directed work — This is a theme found in effective-team research. Notice that visual management supports self-directed work because people can easily see what is going on, to coordinate." – Craig Larman, Bas Vodde from "Scaling Lean and Agile Development"
- "This is one purpose of the Scrum Product Backlog. It acts as a tool for leveling or smoothing the introduction of work to feature teams. A small buffer of high-quality inventory created to support level pull is another example of useful temporarily necessary waste" – Craig Larman, Bas Vodde from "Scaling Lean and Agile Development"
- "It is interesting to note that people's models of causation are influenced by the timeliness (delay) and quality of feedback in the system." – Craig Larman, Bas Vodde from "Scaling Lean and Agile Development"
- ""Common sense" is not so reliable when trying to understanding nonlinear systems—such as large-scale product development." – Craig Larman, Bas Vodde from "Scaling Lean and Agile Development"

funny, quote