DOWNLOAD PDF RISING COSTS OF DESIGN

Chapter 1 : The Rising Costs of Software Complexity | Dr Dobb's

Design costs have been rising steadily since the 40nm node, but it is the acceleration in design costs at 7nm and 5nm that are the most worrisome to the industry. Mobile and Wireless, Artificial Intelligence, Deep Learning / Big Data, ADAS and Embedded Vision will require high complexity silicon and will utilize the advanced nodes.

However, without them, you stand to lose more than ever. One common take on the situation blames institutions of higher learning for effectively price gouging the American people. Higher education is more valuable than ever, and government aid that once came as grants have transitioned to student loans. Meaning higher education is almost 4. Though the cost of higher education has skyrocketed in recent decades, so too has the accessibility of higher education and the diversity of higher education students. Minority students are attending college at record highs, and women now account for a majority of undergraduate students nationwide. This tempers the conventional take that college prices are too high. Instead it seems that colleges are â€" in many ways â€" doing their jobs better than ever, even if they are increasing tuition and fees at an unsustainable rate. Though a number of colleges are combating rising tuition costs, or attacking increasingly unmanageable student loans, the majority of college costs continue to increase. Reason for the Rise Contrary to narratives featuring price gouging higher education institutions, much of the high price of higher education is a simple matter of supply and artificially inflated demand. Contrary to narratives featuring price gouging higher education institutions, much of the high price of higher education is a simple matter of supply and artificially inflated demand. The availability of student loans, and the expectation â€" ever more prevalent over the last half century â€" that most kids have a chance of attending college have provided colleges with a glut of applications. In earlier years, government aid after WWII helped colleges to adjust to increasing demand, building new buildings, creating programs, recruiting talent. In recent decades, however, demand has continued to rise without as much government aid to help with college growth. The GI Bill of Rights was the first large enabler of higher education for the middle class. Enrolling 8 million veterans after , the program exceeded its expectations ten fold. As states focused on building education infrastructure, the federal government continued aid for families to make college affordable. As the economy and double-digit inflation took hold, college tuition and fees climbed rapidly to match or exceed inflation. With less subsidization from government sources, colleges turned elsewhere to pay for educations: The Sticker Price As a country, student loan levels are approaching crisis levels, and many entry-level wages are also stagnating. One point that is often misconstrued, however, is that this is due to price gouging from higher education institutions. A distinction that needs to be made in these discussions is that while sticker prices for universities seem to have jumped rapidly with student debt burdens, the actual average price paid by students has not. While there are a number of ways to reduce costs, more often than not financial aid channels are hard to navigate, and fitting external scholarships can be hard to find. While some schools have taken steps to reduce tuition and fees, and highly-ranked schools often guarantee loan free financial aid, more often than not tuition bills that increase yearly are passed to students. Private schools, however, are where the potential to go into debt has really skyrocketed. While a number of the best schools particularly liberal arts schools are private, attending a private institution is avoidable if rising education costs are a problem, as there are many excellent public schools in almost every region of the United States.

Chapter 2 : Rising construction costs, labor shortage putting a pinch on Missoula developers ~ Missoula Cu

Although the new design cost slightly more, the savings on labor reduced costs by $ per box, which more than compensated for the increased packaging cost and delivered a significant benefit to the bottom line for this business.

Fri, Feb 2, , 6: With construction booming throughout the Bay Area, labor is scarce. Photo by Veronica Weber. Not that anyone was complaining. Though demolition of the fire station was scheduled for the following day, the sunny weather was too good to pass up, and city officials were eager to get the project started. Everyone understood that when it comes to construction, time is literally money. Others are expected to follow in quick succession. According to a Public Works Department schedule, eight projects â€" including the new bike bridge over U. Highway and new parking garages near California Avenue and on Hamilton Avenue â€" will head into construction either this year or in Ironically, the only item that is not eyed for construction until is the one deemed most urgent: In January , construction is set to begin on the U. Highway bridge, a project that city leaders hope to see completed by the middle of That spring, construction of the new downtown garage on a parking lot at Hamilton Avenue and Waverley Street is scheduled to start. The construction climate around Silicon Valley continues to sizzle , driving up costs and straining the supply of available labor, two factors that have forced Palo Alto to scale back its dreams. The bike bridge, initially envisioned as "iconic," is now just a bridge. Two years ago, council members debated ways to improve the site, whether by adding picnic amenities or restoring the riparian habitat in Buckeye Creek, which flows through the parcel. Now, given a lack of funding, staff is recommending opening the undeveloped site as is, with no amenities. And while the project has enough funding to get started, more money will be needed further down the line to furnish the zoo with a variety of interactive features, including an insectarium, a butterfly exhibit, a touch tide pool tank and â€" most notably â€" a "Tree House" feature, which is intended to offer visitors a two-story zoo experience and allow them to "explore the tree canopy and have up-close encounters with the birds and animals that live there," according to a Community Services Department report. These features were removed from the renovation design in , when the project was scaled back because of rising costs. The council will consider on Feb. The degree to which costs have escalated is striking. Yet the market is playing the biggest role, accounting for a 58 percent escalation in costs between and for the police building, Eggleston told the council last week. It does not take into account the many projects that the council wants to pursue but that were not included on the infrastructure list, including the renovation of Cubberley Community Center ; an upgraded animal shelter ; and the implementation of the newly approved parks master plan. All are currently unfunded and, with every passing month, the challenge to make them happen is growing. Here, too, the city is seeing costs spike to unexpected heights. The project is scheduled to kick off in April and cascade, block-by-block, down University and along Downtown North neighborhood streets over the following 12 months. With no takers, city officials reached out to all contractors who had participated in the pre-bid meeting to see if any of them could get the job done. Only one â€" Ranger Pipelines, Inc. The high price, the report notes, can be "attributed to the booming construction industry in the San Francisco Bay Area where local contractors have been unable to keep up and are more selective on project bids. On Monday night, Greg Tanaka and Karen Holman both voted against the Ranger contract â€" a rare occurrence for a utility replacement project. Both argued that the city can do better. As part of procurement process, it reached out to bidders; only two submitted bids, according to a staff report. Ed Shikada, the general manager of city of Palo Alto Utilities as well as assistant city manager, said the low number of bids is a recurring problem. The group also highlighted high-priority items that need to be constructed as soon as possible â€" with the public-safety building on top of the list. The report also identified Fire Stations 3 and 4 as in urgent need of significant upgrades, the report found. Each is more than 50 years old, fails to meet earthquake codes and is "increasingly inadequate as engines have grown in size. It also approved in the infrastructure-projects plan and proposed a hotel-tax increase to fund it â€" a measure that voters approved later that year. Others were added to sweeten the deal for voters on the hotel-tax measure: Faced with rising costs, city leaders have opted to scale back some projects, such as the bike bridge and the Junior Museum and Zoo. Last week, the council considered a

staff recommendation to reduce the scope of the California Avenue area garage, which had grown in order to satisfy demands from area residents and merchants. Originally envisioned as a structure that would create new spaces, the garage was revised last year to also include two basement levels, more than doubling the new parking spaces. But with business owners and residents framing the recommendation as a "betrayal," the council voted , with Councilman Adrian Fine dissenting, to stick with the larger structure. In staying the course on the garage, the council figured it could offset some of the additional costs with revenues from parking permits. For other projects, including the police building and the bike bridge, such an option does not exist, which means the council will either have to "value engineer" these projects to reduce costs or draw funds from the General Fund, which pays for most basic city services aside from utilities. Occupancy taxes from two Marriott hotels on San Antonio Road, whose plans the city recently approved, should help. The need for speed Palo Alto is a leader in many fields. The term "Palo Alto process" has become synonymous over the decades with bureaucratic entanglements, endless revisions and escalating costs. The meeting got off to a good start. After panning the preliminary design at a prior review, board members on Jan. Early in the hearing, board members lauded the project and two members, Peter Baltay and Alex Lew, said they could support it. City staff stressed the urgency of moving the project forward. Assistant Planning Director Jonathan Lait said these concerns could be addressed by approving the project and adding conditions that these items return at a later date for a subcommittee review. Board member Robert Gooyer said he felt like the board was "being bulldozed to make a decision today. He also served on the Infrastructure Blue Ribbon Commission, where he was part of a subcommittee that explored options for a new public-safety building. After hearing the Jan. I feel strongly this is not good stewardship of the responsibility the board has. When a board fails to represent the best interests of the community, the council needs to step in. One way to do that would be to have a council member serve as a liaison to the architectural board the Historic Resources Board is one of several local boards that has a council liaison. Mayor Liz Kniss said during the Jan. For that reason, she and other council members rejected a proposal from Tanaka to revise the garage proposal to add mechanical lifts. In approving the garage, council did agree to add one unusual provision. It explicitly authorized staff to return to the council for additional direction if the Architectural Review Board ARB makes recommendations that drive up project costs. The council needs to look at that.

Chapter 3 : Prime 1 Builders

Remodeling Confidence Increases Despite Rising Costs July 19, The National Association of Home Builders' (NAHB) Remodeling Market Index (RMI) posted a reading of 58 in the second quarter of , up one point from the previous quarter.

Application development is already a costly process: Many problems today require the application of a collection of technologies, not just one. At the same time, the cost to maintain existing software is rising. According to a Standish Group research study http: PC World magazine reports that 22 percent of computers break down every year: In comparison, only 9 percent of video recorders, 8 percent of refrigerators, and 7 percent of big-screen TVs malfunction see http: The Software Productivity Research consulting firm http: One oft-quoted statistic holds that users only work with about 10 percent of the features available in most software. Bridge Building Versus Computer Programming "The high cost is not due, as you might think, to programmer stupidity," Spector says. The obvious difference is that bridges have physical limitations, whereas software has only theoretical limits. But since the work of a program is invisible, it is deceptively easy to introduce sweeping changes midproject. Almost always, these changes will complicate the product. In another paper authored in , "No Silver Bullet: Essence and Accidents of Software Engineering" http: Brooks argued that complexity is part of the essence of software. In this respect, software systems differ profoundly from computers, buildings, or automobiles, where repeated elements abound. Digital computers are themselves more complex than most things people build: They have very large numbers of states. This makes conceiving, describing, and testing them hard. Software systems have orders-of-magnitude more states than computers do. Likewise, a scaling-up of a software entity is not merely a repetition of the same elements in larger sizes; it is necessarily an increase in the number of different elements. In most cases, the elements interact with each other in some nonlinear fashion, and the complexity of the whole increases much more than linearly. Nothing even convincing, much less exciting, has yet emerged from such efforts. I am persuaded that nothing will," he said flatly. Interestingly, in the history of bridge building, Spector did find overshot estimates, bloated time frames, and even product collapses. But when a bridge fell down, an investigation commenced and the cause of failure was determined. In the software industry, no such audit takes place: More often, software failures are rationalized and ignored. Software producers do not seem to bear the same burden of accountability as manufacturers of physical goods. But the world of commercial development tends to work against good design practices. Many large commercial products are created by an army of programmers, each working on a separate piece of the problem. ERP software aimed to replace all the separate departmental systems inside a corporation with one central software system. ERP was supposed to make it possible for a sales order to automatically generate the corresponding adjustments in production, inventory, and accounting. It was integrated, it was end-to-end Many companies could never get the software to work at all. Just before Halloween , Hershey Food Corp. The company reported a 19 percent drop in earnings that quarter. One drug distribution company went bankrupt and filed a lawsuit blaming SAP. ERP software has often been a failure because it is too complicated to install and use. Much of this is due to software complexity, program bugs, and poor quality in software programming. These all add up to an immense burden on the economy. The complexity of ERP software stemmed largely from its attempt to integrate so many different functions. But the heterogeneity of the technical landscape is only increasing, and interoperability is critical. James Gosling, creator of Java, has harsh words for systems that perform only their own functions with no regard for integration: It makes the whole universe hard to use. And most of the new tools on the market "are trying to save people from the fate of having to write code. Product-oriented programmers, subject to extreme time constraints and the pressures of an ever-changing market, will invent clever solutions to their dilemmas; but clever workarounds are part of the problem. Can Research Survive in the Garage? Sometimes we have doubts as to whether we are doing the right thing. In the garage, "there has been proved in many cases to be limited time for fundamental innovation I think the limitations are becoming hindrances. And of course such programmers are even less likely to create a reusable component because that would triple the workload. Researchers, by contrast, have the luxury of time. Gosling advises programmers to resist feature creep: But no

changes should be undertaken lightly. He also advocates "shameless theft" in design: Doing things right will only add a few percent to the cost of a development project. You will save many times this cost by not having to make expensive adjustments and dot releases.

Chapter 4 : What is Driving Up the Cost of Construction in Seattle? â€“ Board & Vellum

Hidden provisions in contracts between health-care providers and insurers allow hospitals to hide prices from consumers, add fees and discourage use of less-expensive rivals.

You may have already noticed that trade show freight costs are rising â€” significantly. If not, you will. There are so many contributing factors affecting trade show shipping prices right now that it is hard to determine if any one specific thing makes up the bulk of the increases we are experiencing. But the fact is, the trade show freight market is already experiencing record high prices and there is no immediate relief in sight. If you look at the current economic climate, data shows that consumer spending over the holiday season was the highest it has been in over four years. Add to that, the U. Another report shows factories received more orders in December than they have since What does all of this mean? Shipping capacity was already getting thin even before the most recent boost in manufacturing was added to the mix. The restricted hours of service that carriers are now governed by creates a shortage of equipment and higher rates, using the basic economic principles of supply and demand. Then came the ELD mandate which is intended to help create a safer work environment for drivers, and make it easier and faster to accurately track, manage, and share records of duty status RODS data. Then there is the driver shortage which has been an ongoing concern for several years. According to the American Trucking Association, the driver shortage is reaching an all-time crisis with an estimated shortage of 50, drivers at the end of last year. Multiple hurricanes, wild fires, and significant snow storms late into spring have challenged both shippers and carriers alike to get shipments delivered into and out of areas that are affected by these forces of nature. In an article in The Produce News from January , a citrus grower in Texas explained that he was having extreme difficulty getting all their loads covered. He went on to say that he has never seen such a shortage in the two decades he has been in the citrus business. The article goes on to emphasize that if trucking capacity is short now, we could be in for a huge problem as the season picks up. So what can you do in terms of your trade show programs to help mitigate these increasing freight costs that will ultimately impact your trade show budgets? Here are some very simple things you can do to help keep your freight costs in check: Stop shipping boxes and boxes of marketing materials. Distribute your marketing materials electronically. Some products are bulky and heavy and you can easily tell your trade show story with interactive technology and some smart graphic design. Sometimes less is more when it comes to the actual structure you have in your exhibit. Be smart and creative in your design and keep freight in mind when you are deciding what you really want, what you actually need and the things that you just have to have in your booth space. By designing custom exhibits with highly engineered exhibit display systems that are lightweight and made to pack down tight and light, you can reduce the sheer number of crates and weight that you need to ship to and from the show. Then these are the tools for you. About the Author Scott B. For the past two decades, Scott has been working with organizations of all shapes and sizes to make marketing and business development efforts easier and more effective. As a strategic advisor, he truly wants his clients to consider him an extension of their team and most of them do. Scott specializes in understanding big picture goals and then creating and executing the action plans needed to meet those goals and exceed expectations.

Chapter 5 : Remodeling Confidence Increases Despite Rising Costs

The floor plans below are standard layouts but don't let that limit your imagination. Every bunker/bomb shelter we build is customized to meet or exceed your needs and expectations.

Jeff Pelletier, Dream Crusher. Here are my thoughts on what is going on with the cost of construction in Seattle and what you can do about it. What is driving up the cost of building a new house or remodeling my home in Seattle? In particular, the costs of multi-family development are quickly reaching the point where I think we are going to see the market hit the brakes as rising rent is no longer covering the drastically increased cost of land and construction. Here are some of the factors at play that are making construction more expensive: Quite frankly, and this stinks to really think about too much, there are a lot of players right now aiming to make big profit because, a they can, and b the market is so hot that pretty much any price is acceptable as long as someone shows up on the job. During the Great Recession, the design industry lost a ridiculous amount of talent to people either leaving the profession for good to pursue a more stable and lucrative career, or opting for early retirement. However, the shortage in the construction industry is far greater. While there is a lot of benefit to a thorough review of your project, we are seeing tremendous cost and schedule increases from local building departments. Where code reviewers would often ignore whole sections of a house not impacted by a remodel, they will now look at the entire house and insist upon requirements to bring that part of the house up to code. Certainly it is well-intentioned, but it drastically increases cost. It must be said that we are not seeing unreasonable increases in profit or labor rates from general contractors. Interesting to note that it is still much higher than the typical targeted profit margin for design firms. What we are seeing, though, is drastically increased rates from their sub-contractors. Out of all of these reasons, this one has me concerned the most, as I think it has the biggest risk to artificially weaken demand. Material costs have just gone up. People charge more because they can and because their rent for their business has gone up, their labor costs have gone up, etc. Ironically, in all of this I have heard from numerous general contractors, architects, and designers in other firms, and they have all had a hard time generating the kinds of profit you would expect in such a boom time. Is it worth it to remodel when the cost of construction is so high? The flip side to all of this, is the fact that the value of what is built is rising equal to â€” or faster â€” than the cost of construction, still. So, no one is moving and everyone is swallowing the enormous costs or trying to and doubling down on remodeling a house they just bought a couple years ago. How long will it stay this expensive to build in Seattle? I get asked all the time how long I think this insanity will last. I still have no idea. The reality is, this city has fundamentally changed. Things will certainly slow at some point, but there are some undeniable market realities in Seattle: There is only so much land in the Seattle metro area. It puts tremendous pressure on the Seattle single-family housing market. The awesome city factor. There are a LOT of people moving here. Plus, there is one other thing: How do you plan for the cost of construction being so high, or for changing during your project? From our perspective, we try to do the best we can to help steer the conversation to what is a realistic budget early on. We keep an extensive database of past projects and what they cost. When we look at new projects we analyze those projects and usually add a hefty increase to reflect our thoughts on where the market is going. Historically, we had a solid track record of being above or at the final construction number although certainly not perfect. Lately, however, it is getting far more challenging. So, we keep pushing our numbers up. Bring in a contractor early. We pretty much uniformly select a general contractor either during, or at the end of, the Schematic Design phase to help with real-world pricing before a we get too far into a design direction. Look at the whole picture. We also advise all of our clients to look at construction costs as only part of the project budget. So, what should you do to budget for your project? The market is silly, and while the numbers still pencil out in terms of value we advise you to go into this with eyes wide open. What subject areas are you interested in?

Chapter 6 : Semiconductor Engineering Impact Of Rising SoC Design Costs On Innovation

Despite the rising costs and other market uncertainties, McLeod said Farran and its team of investors are moving forward with plans to develop the Riverfront Triangle in downtown Missoula. That project, now years in the making, includes a hotel and conference center, along with structured parking, retail and housing.

Rich Wawrzyniak If there is one truism in the semiconductor market, it is that rising costs will impact unit demand at some point if they continue long enough. The subject of this blog deals not with device ASPs; but rather with rising SoC design costs, and their effect on the number of designs at the advanced nodes. Even though the mechanism governing each set of numbers is different device ASPs vs. In this case, the number of design starts is impacted by the climate of rising design costs. The market leaders will continue to aggressively rollout new designs in order to maintain their market leadership. There is always a gap between when a new process geometry is introduced by the leading companies doing the most complex designs and the next group of companies doing less complex designs but still needing the features or attributes that the new process geometry offers. Many of these statements are not new to most people. Design costs have been rising steadily since the 40nm node, but it is the acceleration in design costs at 7nm and 5nm that are the most worrisome to the industry. But Semico is already observing a shift in the companies that participate in the second wave of designs. One of the major sources of innovation is found in the designs accomplished by the second wave of products that are introduced by companies that trail the bleeding edge. The functionality and rich feature sets that are found in advanced designs have provided a path for pioneering but less complex designs two or three years later. Once these designs have been proven and the cost structure to create them has become more moderated, other designers jump on the bandwagon. This has always been the case in the semiconductor industry and is not a new trend. However, Semico has observed a lengthening of the time interval between the initial entrants and when the 2nd wave companies are able to deliver their solutions. These are the design starts that will mostly be aimed at the new applications entering the market. While the far future is somewhat cloudy, the near term still shows reasonable growth for the nodes down to 10nm. Beyond 10nm, design starts are going to be more constrained by rising design costs. Although Semico does not see the total number of designs that migrate to the new nodes being appreciably different than in previous process geometry transitions, we do believe the time frame for such transitions by the majority of companies doing designs at these levels will be somewhat longer. Semico would like to hear your opinion on this very important issue. Do you think that the accelerated increase in design costs associated with 7nm and 5nm designs, will lengthen the time interval between the initial users of these geometries and the 2nd wave of product designs? We welcome your comments.

Chapter 7 : Rising costs create high anxiety over Palo Alto's infrastructure plans | News | Palo Alto Online |

Restaurant Executives Weigh in on Rising Labor Costs, Delivery and Design During Restaurant Leadership Conference Find out what we learned about rising labor costs, third-party delivery and more!

Chapter 8 : Trade Show Freight Costs are Rising. This is Why.

Rising costs create high anxiety over Palo Alto's infrastructure plans when it held a design competition for the project. when the project was scaled back because of rising costs.

Chapter 9 : Understanding the Rising Costs of Higher Education

Yet material costs in construction do not have to force your construction company to sacrifice in quality or design. By implementing technologies and design processes including lean construction, BIM and construction field management software, you can increase the efficiencies of your construction crew.