



SD DEVICES

A viable solution to increase infield productivity in rough working environments.

Noah K. Martin
Summer Holt
Kallan Nelson
Moataz Reda
Kelsi Lakey



WHAT IS THE PROBLEM?

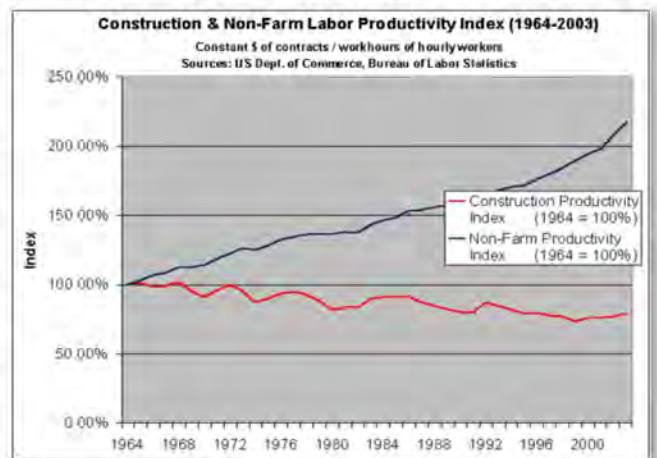


Picture this...

Bob is a carpentry foreman and construction veteran who has been using large paper plans on site for 25 years. However, even though this process for information transfer is normal and comfortable to him, it's not an efficient process. Just yesterday his crew framed an entire wall incorrectly because the plans he had on site were out of date. Now his crew is wasting a whole day problem solving and completing the rework. In an effort to remedy this wasteful process and limit the amount of time wasted on the current project, a project engineer from the office in a crisp collared shirt tells Bob that he is going to have to use an iPad with PDFs of the plans instead of paper. Not only is the screen far smaller than the paper plans he is used to, but he is going to have to be as gentle with the tablet as he is with his baby niece. The new tablet is too small and fragile to increase the crew's productivity and have the desired impact.

This same story is playing itself out all over the construction industry.

- The Construction Industry Institute estimated that 55 - 65% of construction effort did not go to value creation.ⁱ
- The average construction worker operates at 40% efficiency. This equates to an annual labor waste of \$1.065.ⁱⁱ
- The National Institute of Standards and Technology estimated that a main contributor to loss of productivity in all industries was due to inadequate interoperability of information.ⁱⁱⁱ
- Labor Productivity has not increased in decades.^{iv}



GSD provides a solution that will reduce waste within the construction industry. Our solution will improve communication (eliminating wasteful mistakes and inefficiencies) and collaboration (improving labor productivity and efficiency). Tablets are in the process of being implemented by industry leading construction firms, but current technologies are not catered to such a rough and demanding environment. Current tablets are imperfect substitutes for paper plans and:



- Are inherently fragile;
- Are limited by the available screen sizes which are relatively small compared to construction documents; and
- The larger options are not portable.

"It is hard to use technology in the field because it constantly breaks. Can't even keep a 'construction durable' phone from breaking." - Randy Dana, VP Operations, Dana Waterproofing

Our initial focus on the construction industry is based on our experience in the industry, our deep contacts within it, the relationships we have that are encouraging us to build a solution for the problems they have and their commitments to purchase a solution from us. But, this is just one example of the demanding industries that are in need of a technology solution, which can survive their environment while improving infield productivity.

THE GSD SOLUTION.

The GSD is an 11"x17" tablet which gives the desired size and durability for onsite use.



- Cutting edge super AMOLED display technology enables the screen to be created completely out of plastic. Not only does this mean there will be no glass in the device but also that the screen is flexible, and can roll.
- The flexible screen allows for a roll-able design, maximizing transportability without minimizing screen size.
- The back plate design provides a rigid clipboard-like, feel when unrolled.
- Through licensing and purchase agreements GSD Devices will obtain and utilize industry leading screen and hardware technology.
- Final assembly, firmware assembly, and quality control will be managed by GSD in house.
- GSD will own design and firmware patents.

“THE FIRST RULE OF SUCCESS IS TO SURVIVE.”^v

GSD will initially concentrate on the construction industry where onsite, communication between the office and the field is essential and necessary to keep on top of constantly updated plans, models, and specifics. The industry needs tools to aid their workers in onsite problem solving and clash detection. Reduction and prevention in time spent on such



activities would significantly lower labor and material costs for construction firms. More often than not projects are completed in collaboration with many different firms or contractors and so communication is essential. These needs are reflected in the growing sustainable construction practices trend. In recent years sustainable construction has become "more cost effective, helping green and sustainable construction survive the recent downturn." The Industry is expected to grow 22.8% between now and 2017. vi

The Construction Industry is the best primary market as it has the greatest need for innovation due to its productivity needs and sustainability trends. GSD will initially target the top 400 contractors in the US as they have the resources and the desire to implement innovative strategies. Smaller firms are greatly influenced by these firms due to their visibility and project sizes and number within the industry.

Success in construction with documented cases of productivity increases, cost savings, enthusiastic users, and endorsements from management, provides GSD with new market opportunities or an exit to larger players.

Examples of Industry reactions when approached with idea, typical in conversations with over 50 entities.

Company Description	# of Employees	Annual Revenue (Millions)	Feedback Received
Turner Construction/Turner Facilities Management Solutions	1001-5000	9,005.7	Great interest in added value expressed. Facility Management Group has expressed interest in partnership for showcase of future technology which can change the industry as well as Beta testing of GSD on construction sites and in facilities management settings.
Great Seattle construction company founded in 1952	201-500	782.0	Interested in Beta testing . Company has a huge sustainability segment and believes GSD could be valuable addition, with possibility to be more valuable in field than iPad.
Great Seattle construction company founded in 1967	51-200	219.9	Interested in Beta testing . See GSD as having the potential to be more efficient than kiosks or iPads, due to size and transportability.
Andersen Construction	121-250	-	Already employs technology in the field but believes there is room for improvement and is interested in Beta testing .
National construction company founded in 1864	1001-5000	3,196.0	Great interest shown, as mobility and size would meet needs which stationary screens and small tablets could not. Company has a large focus on integrated project delivery using BIM.
National construction company founded in 1937	1001-5000	1,958.7	Utilize iPads, Operations Manager and Project Engineer both feel GSD would add greater value to operations.

GSD will reach its customers through third party endorsements, targeted press in industry publications, social media: a direct marketing and sales approach. An integrated traditional

campaign will be combined with a business to business telemarketing program to generate leads. Dedicated GSD representatives will convert leads generated into lasting customer relationships through follow-up tele-sales and face-to-face deals. This personal approach will be effective with the larger construction firms, who employ technology directors. Adoption beyond the Top 400 Contractors will be encouraged through a trickledown effect and a broader marketing program.

“EXCITEMENT IS IMPOSSIBLE WHERE THERE IS NO CONTEST.”^{vii}

Concentration is high in the computer manufacturing industry, which includes tablet manufacturing, in the US and is marked by several large players. According to IBISworld, four of the largest companies own 86.5% of the market share (HP 27.3%, Dell 23.3%, Apple 19.2%, and IBM 16.7%). The focus of these companies is to create a high-powered tablet for entertainment, personal use, and some office use. While their products have been implemented within challenging workplaces they are not designed to do so. This presents an opportunity for a company like GSD to insert a tablet designed specifically for particularly harsh industries and workplaces. Among the durable tablet producers the most applied positioned companies are Motion Computing and Panasonic.

The mobile computing sector of the computer manufacturing industry is expected to grow significantly over the next five years.^{viii} Competition within the industry is tough.^{ix} Despite the higher cost of manufacturing in the US, analysts believe that additive manufacturing processes, such as 3-D printing, could create resurgence in the industry.^x This creates an opportunity for newer computer manufacturing companies to make use of this resurgence in innovative ways. Despite the heavy concentration, the industry is highly fragmented which allows for opportunities within niche markets. There are several different companies that manufacture durable tablets but the majority have only a small market share. Durable tablets available today are bulky, too small, hard to read in direct sunlight, breakable despite the durability rating, have a non-user friendly interface, and overall don't improve productivity for the consumer.

Competitors

- Apple
- Samsung
- Microsoft
- Asus

Consumer tablets are not designed to withstand rough environments, which leads to costly replacement charges.

- Motion Computing
- Panasonic
- Durabook

Durable tablets and toughbooks are not easily transportable and their screens are smaller than what is desired by industry professionals.

	GSD	Apple Ipad	Microsoft Surface Pro	ASUS Infinity	Google Nexus 10	Panasonic Toughpad	Motion Rugged F5t	Durabook TA10
Drop Resistance	*					*	*	*
Water Resitivity	*					*	*	*
Dust/Particulates	*					*	*	*
Weight < 2lbs		*	*	*	*			
Display > 11"	*							
Stylist	*		*			*		
10+Hr Battery Life	*	*	*	*	*	*		
Wi-Fi	*	*	*	*	*	*		
4G			*	*	*	*		*
Bluetooth			*	*	*	*	*	*
SSD Drive	*		*	*	*	*	*	
Microsoft Compatability	*		*	*	*	*	*	*
Low Price		*	*	*	*			
Score	9	3	5	5	5	6	7	5

GSD's Competitive Advantage

- Large size
- Durability
- Industry Approved Design
- Lightweight



Securing Market Position

- Forming lasting customer relationships with leading firms.
- Strategic partnerships with the software firms, which are leading each of the target industries.
- Continued development in direct response to industry feedback.

GSD's licensing and purchasing agreements with industry leading suppliers will enable the most up to date technology to be housed within the GSD without additional R&D and manufacturing costs. Keeping GSD's components and price always competitive, while supplying rough industries with devices tailored for their needs.

"NO MAN IS WISE ENOUGH BY HIMSELF"^{XI}

This team competed in UW's 2013 Environmental Innovation Challenge, and received a large amount of helpful feedback and suggestions, which have been incorporated into our plan.

Noah Martin is a senior Construction Management major and a member of the Harold Frank Entrepreneurship Institute at Washington State University. His course load, internship experience, and leadership involvement throughout college has given him an understanding of successful management practices.

Summer Holt will graduate in December 2013 with a B.S. in Civil & Environmental Engineering from Washington State University. As a fellow in the Harold Frank Entrepreneurship Institute she has cultivated a knowledge and understanding of start-up development.

Kallan Nelson is a senior Entrepreneurship major. Her knowledge in business management, marketing, and financials gained through business courses contribute to the project's growth. Her drive brings enthusiasm to the team, and her motivation administers productive research and project development.

Jeff Jenson a senior Bioengineer at Washington State University. His challenging and diverse course load, which ranged from mechanical engineering to electrical engineering courses, has develop his strong technical and design knowledge.

Moataz Reda is a senior Bioengineer at Washington State University. For three years he has been involved in undergraduate research at WSU. Where he has grown his strong design and problem solving skills, these coupled with a passion for innovation pushes the project to progress successfully.

Kelsi Lakey is a junior Honors Computer Engineer major with minors in Mathematics and Computer Science at Washington State University. Kelsi has been involved in research for the last three years, which has given her experience working in a team and completing large-scale projects within a strict time frame. She brings technical expertise to the project.

Advisors:

Kevin Randolph is a Value Management Advisor who combines business acumen, marketing savvy, business development skills with extensive relationships, high tech engineering expertise, and hands-on finance, operations, and customer service leadership to drive rapid growth, turn around companies, and increase shareholder value. Randolph has held entrepreneurial executive roles as CEO, CMO, COO, CFO and board member. He has had success in forming/structuring new enterprises and startups, identifying market and new business opportunities, raising capital, developing new products, and building global/virtual teams. Some of Randolph's past endeavors include Bank of America, Charles Schwab, ICTV, Asia Online, and the Harold Frank Entrepreneurship program.

Ray Combs has over 12 years of mobile product and software product experience. He is a thought and team leader. Combs has been successful at motivating and driving widely varying teams to deliver multiple products to market, both domestically and internationally. Combs expertise lies with product marketing, operations management, product design, product roadmaps, Process development, and more. He has been a part of projects within Palmsource, Amazon, Memeo, and Lytro.

Jim Broadlick is Vulcan, Inc's Director of Design and Construction, where he has managed seven complete buildings and currently has three in construction and three in design. All have been integral in the revitalization of the South Lake Union neighborhood. Previously he was the Engineering Projects Director at Amgen, a Project Executive for Skanska USA

Building, and a Project Manager for the University of Washington. His wealth of experience as an owner and a contractor bring valuable insight into the initial target market.

FINANCIAL ANALYSIS

Financials are based on projected sales and estimations of start up costs. Each year a certain number of tablets are sold at \$2,500. This retail price was chosen based on comparable tablet prices and what its value is to customers. The estimated cost of building the device is \$1,493. The cost of goods gradually gets lower as years pass because the company will be buying bigger quantities of supplies. By year five, the estimated cost of goods is \$1,124.20. Assumptions of start up expenses are based on research of comparable companies. A multiplier was factored in to count for the difference between existing companies and start-ups. The founding and management team have agreed to work at lower wage rates for the first two years to keep expenses low.

In order for GSD Device's ability to operate, two rounds of funding are needed in return for 30% of the company. We will raise \$500,000 to cover start up costs for year one. In the second round of funding, \$820,000 will be raised to cover costs for year two. GSD Devices will start seeing profit in year three, where it reaches its break-even point. By year five, GSD Devices will be making a net profit of over \$2.7 million. A potential exit strategy after year five is to be acquired by a larger technology firm that has not gained traction within our niche.

Financials (\$)	Year 1	Year 2	Year 3	Year 4	Year 5
Revenues	40,000	2,087,500	8,002,500	19,432,500	28,857,500
Expenditures	536,736	2,904,623	7,707,397	18,145,755	26,061,261
Net	(496,736)	(817,123)	295,103	1,286,745	2,796,239

¹ Mossman, Alan. "Creating Value: A Sufficient Way to Eliminate Waste in Lean Design and Lean Production." *Lean Construction Journal*.

² "Occupational Employment and Wages: 47-2061 Construction Laborers." U.S. Bureau of Labor Statistics, 2011.
 $(779,370 \text{ US CNST Laborers}) * (\$34,170 \text{ Mean Wage}) (40\% \text{ Efficiency}) = \$1.065B$

³ National Institute of Standards and Technology – Capital Facilities Information January 2006

⁴ US Department of Commerce, Bureau of Labor Statistics

⁵ Malcolm Klein, circa 1988

⁶ Mathews, Christopher. "Green and Sustainable Building Construction." *The Top Ten Fastest-Growing Industries in America*. Time Inc., 12 Apr. 2012

⁷ Henry Cabot Lodge,

⁸ Krabeepetcharat, Andrew. "Computer Manufacturing in the US." IBISworld, Jan. 2013.

⁹ Mawston, Neil. "Android Captures Record 41 Percent Share of Global Tablet Shipments in Q3 2012." *Strategy Analytics*, 25 Oct. 2013.

¹⁰ Greenemeier, Larry. "Breaking the Mold." *Scientific American*, 7 Jan. 2013.

¹¹ Titus Maccius Plautus