



Alexander Lozada

Response to your article

alexander_____ <_____>
To: "Jasper St. Pierre" <_____>

Fri, May 15, 2015 at 4:47 AM

Hi again -

Let me again thank you for taking the time to respond to my comments. I do have a few counterpoints and questions to add, if you'd be as kind to respond.

I absolutely agree with your statement on the Raspberry Pi (as I stated in the article). I own two, and they're fantastic for developing (as I'm sure you'll agree). However, as a consumer computer - especially as one aimed at users with little to no computer usage, they are a complete nightmare in terms of setup and ongoing support. The desktop situation is less that usable with Raspbian, but RPI's newer Maynard desktop looks very promising, and much more snappy. But yeah - overall, definitely not something I'd want to work with everyday.

SD cards are a problem with read write cycles as you mentioned. I got around this mostly by moving my system to a USB and leaving the boot on the SD - but again, not something for those new to tech in any shape or form.

However, something the RPi does have going for it is the composite video out. I am curious as to why Endless has opted for HDMI instead of composite, or included both. (I'll get a bit more into that later on).

As far as Intel - I don't think I can comment about the cost effectiveness, as I haven't done any research into the demand of the applications listed. I could argue that those in your targeted market would have less of a use for high-bandwidth, web based programs like Spotify and Skype, but I don't have any facts to back up those assertions. I'll trust that Endless has done more research in that area - if you have any more information about this sort of thing, I'd love to hear about it. The types of applications those in your target market need seems integral to your product. How did you find out what sort of applications those who have never used a computer before would need?

In terms of training, I believe there was a miscommunication - I had defined "training" as any sort of serious outside tutorials and reading that aren't immediately apparent or intuitive, as opposed to your definition of actual tutoring. However, I would argue that reading manuals and getting training from another person or tutorial are very similar. I do like your idea of learning how to use a computer by gamifying the experience. My question is why has Endless chosen to make a completely separate operating system, instead of going with a well-known OS with good and easily accessible documentation? Could you not slightly modify the experience to work with any OS?

You say that software that requires no training is possible given that you have an “understanding of what the users know and don't know”. While I agree that this is true for very simple applications, I disagree that something as complex as LibreOffice Calc can be used by someone with very little computer experience without looking at documentation. However fantastically written the in-OS help is, every user is obviously different, and there will always be gaps in the tutorials. I live on the computer, and have a job as a web developer - however I still need to look up documentation for many programs. I guess I'm asking for your definition of “training”. It is a tad misleading if Endless' definition of “0 training” does not include documentation or a help system.

“When we went to visit a user who bought the computer in Guatemala, they didn't have an HDTV, but their neighbor just got one, and they had been passing it around -- one family had the computer/TV on Tuesdays, Wednesdays and Thursdays, and another had Fridays, Saturdays, Sundays and Mondays. In our markets, it's extremely likely that somebody around you has an HDTV that you can borrow.”

Yes - this is something I have not accounted for. However, this is a one-time case that you are basing possibly thousands of sales on. Also - what happens once both households have computers, and are actively using them for their own businesses? The novelty of having a computer will soon wear off, and the necessity of having a computer all the time will take hold. Unless you have tested this sense of community in a wide variety of neighborhoods, over a long period of real-world usage, with a high success rate, I do not think this observation is valid.

“We did a lot of R&D with CRT TVs and found out that the engineering effort for changing our OS to work in that resolution would be extremely difficult”

Yes, it would be difficult. But you yourself say Endless is aware of the penetration of CRTs in your target market. Don't you think this would be a fantastic issue to address? Why spend money for a product that not everyone can use? I understand I am not at all aware of the financial standings of your company, and it would be naïve of me to just say “Yeah, just make it compatible with CRT! Shouldn't be hard, right?” But don't you think it was worth a try considering your target market? What was it that made Endless decide to forgo further development in that area for its current system?

“Often, an efficient HDTV will pay for itself on the power bill in a month or two” I absolutely agree, and it's much more green to save power. I can't personally validate the claim that an efficient HDTV will be that much more cost effective, so I will trust in your information. A CRT may cost more in the long run, but in many situations it will be more manageable to those than the upfront cost of a new HDTV or monitor - especially to many who already *own* a CRT and have been easily paying the electric bill for quite a while with no problem.

Yes, I have used the HP stream (the \$200 computer I was talking about in the article) for quite some time as my main development computer. To be quite honest, I think the keyboard is fantastic (I'm not embellishing. I think it's really good- but I also think the Surface 3 type cover is good, so I might just have bad taste...). We do all have different tastes when it comes to typing, but I think the very fact that the system *actually has* a monitor and a keyboard is a huge plus. You say that people are not interested in laptops for fear they will be stolen - but doesn't that directly contradict the sense of

community you related to me earlier? Why would someone feel completely safe lending out a television, but afraid to keep a laptop? And to answer what you've said, Chromebooks have got a lot better at offline stuff. They're not perfect by any means, but the fact that they are well established and supported is very helpful.

As for your story about the boy in Guatemala, I am touched (and don't take that as sarcastic). *That* sort of thing is part of what makes computers great, and sharing content great. The spread of information and knowledge unifies humanity. What I'm not crazy about is the use of these emotions in Endless' advertising. Those advertisements elicited a sense of pity. Good products are made by understanding special needs - not looking down on a certain group of people. I'm not saying the Endless was developed with this mindset (you've in fact described the opposite to me), but the advertising certainly portrays it in a distasteful light. In the same Reddit thread, I found many people from your targeted areas that found this sort of view demeaning (i.e. "What Indian would need this when they have the skill to find or build something better for cheaper?" [to paraphrase]) .

Anyway - how do you respond to the fact that a computer can be bought for less money? Finances seem like the Endless' selling point, so why should those who are already in poor financial times spend more for less? How will you prove that your software is worth the extra money, and how will you make yourself a trusted brand over well-known competitors like HP, MS, Google, or Asus?

Anyway - As far as preloaded software, I actually do find that bit very useful (I've mentioned it in the reddit comments before, but it's kind of buried now...). It's definitely a huge plus, especially considering that many users will not have access to reliable internet. And I'd like to include a short apology here - it's very easy to critique the hell out of something you disagree with, and forget that there are real people with real dreams behind it. I was pretty brash in my statements in the article I posted, and I don't think it was fair considering I haven't yet talked to you or your team. I'm glad I've got a chance to discuss my concerns, and get your input this time around.

Thanks again, and good luck. As much as I critique your product, I would love for your team to succeed in fulfilling their goals. Let me know if you need any clarification on my end, or if I misread any of what you said. It's pretty early and I'm not exactly well rested.

- Alexander Lozada

From: Jasper

Hopefully this email address is proof enough I work at Endless. If you need additional proof, I can provide it.

I'm a software engineer working on low-driver support and core OS functionality, so my wording is going to be fairly technical. If I ever go too technical, or you have any questions about something I'm saying, feel free to ask.

I've CC'd our PR guy just in case he has anything additional to add. (Rob: I was commenting on Reddit, and the author of <http://senntenial.com/2015/05/13/why-the-endless-computer-isnt-going-to-change-the-world/> asked for my point of view.)

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As you mentioned, the Raspberry Pi is \$35, and our computer is \$169. There's a reason for this.

Believe it or not, we actually started prototyping with Raspberry Pi machines (along with its cousin, the lesser known "ODROID" from Hardkernel, which uses a Samsung Exynos platform instead of a Broadcom one).

The Raspberry Pi isn't a usable computer. Besides the issues with it being primarily designed as a hobbyist device, there's lots of technical issues. The GPU itself has driver issues with keeping up, and you simply can't run a composited desktop on it. In a bit more layman's terms, that means that the desktop will flicker as you resize windows, you can't do desktop effects like Expose or transparency. It's just not as nice to use, and the constant flickering and redrawing makes it feel slow and unstable.

The storage is an SD card. When we deployed our prototype, we often came back to SD cards which had melted in the extreme heat, or had no write-cycles left after an update or two. We found that we couldn't ship SD cards for the core OS in our product (which is why we have the eMMC / SD card split in our low-storage product -- the eMMC storage contains the core OS, and SD card is mostly additional read-only storage)

The ODROID is much better, but the Exynos platform is actually expensive, relatively. Hardkernel, the vendor behind ODROID, sells the product for a loss, and then tries to make up the expense with accessories.

To build a proper product with robust power sequencing, electromagnetic shielding, plastics, packaging, we actually found out that the Exynos platform was as expensive as Intel, so we opted to go with Intel. Yes, we're paying the Intel premium. We still do have active R&D doing investigation on an ARM product, but the Intel product will always be there: our users want applications like Skype, Flash, and Spotify. Applications which aren't available on ARM platforms.

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As for the OS, we did indeed put a lot of work into making it intuitive and easy to use for our users. Yes, training is often a thing, but a combination of user manuals, a built-in help system, and tutorials that try to encourage new tech users to learn what "clicking the mouse" is do go a long way. I've been down to users in Guatemala. I stood behind users who have never

used a computer before, and watched them go from unboxing Endless to using our typing app and playing games, without me saying a single word. I've watched similar users try to do the same with Ubuntu or Android, and failing.

I'd say that it's not impossible to build something that doesn't require training, all it requires is careful observation, an understanding of what the users know and don't know, what they have and don't have, and dedication.

Could we be better? Of course! That same user playing the games stumbled upon plenty of things during that research session, things which we haven't gotten around to fixing. Do I think what we have is a good OS? Yes.

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As for CRT monitors, you sort of have to understand the markets. Endless is positioned at a specific price point, \$165. Users who can spare \$165 for a computer are in a certain market range and make a certain amount of income. They might require financing or loans, the entire family might pool up or save for a few months to buy the computer. Our computer is carefully positioned in this target market.

Endless's tagline and goal is "access for the next billion" -- the current billion who cannot afford computers most likely have modern HDTVs or can borrow one from their neighbors around them.

Something you probably haven't realized is the aspect of community in our markets. When we went to visit a user who bought the computer in Guatemala, they didn't have an HDTV, but their neighbor just got one, and they had been passing it around -- one family had the computer/TV on Tuesdays, Wednesdays and Thursdays, and another had Fridays, Saturdays, Sundays and Mondays. In our markets, it's extremely likely that somebody around you has an HDTV that you can borrow.

We're extremely aware of the penetration of legacy CRT TVs in markets below the ones we're targeting right now. CRT TVs have their own technical challenges, which relates to the resolution and format. CRT TVs either take NTSC signals or PAL signals. NTSC signals have a rough resolution of 720x480, and PAL has 720x576.

If you've used a computer in 640x480 mode, you know how tough it can be. Redesigning our entire OS and applications we ship like LibreOffice to work with that many pixels will be tough. We did a lot of R&D with CRT TVs and found out that the engineering effort for changing our OS to work in that resolution would be extremely difficult.

One other thing that probably should be mentioned is the power draw of a CRT TV. CRT TVs run locked to the mains -- 60Hz or 50Hz -- and often, an efficient HDTV will pay for itself on the power bill in a month or two.

It's entirely possible that a future product -- perhaps a lower-priced ARM product -- would have CRT TV support.

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One of the definite things we've seen again and again is that we do indeed need offline content. The "it works offline" is really not meant as a dig towards Chromebooks. I'm sitting here on my desktop computer, typing into Gmail (a web app), listening to music streaming through Spotify (a web service), while I have open tabs with a Skype conversation and a paused Netflix stream. I don't think people remember what computers are without the Internet much anymore.

The goal isn't "I can edit a word document while offline", the goal is "it works offline". Can I listen to music, research about turtles and print while offline? Watch a funny video with the kids, and learn about linear algebra?

One of the things we're trying to do is not only provide applications, but bundle useful content with the computer so it can be used. We have a large collection of licensed music and videos, we have Wikipedia and Khan Academy content, health information and.

That stuff probably wouldn't excite you very much, but it's actually been some of the most powerful things we've shipped. Again, while I was in Guatemala, I saw one shy little kid, around 10 years old, read to his brothers and sisters the story of Poseidon.

To be genuinely honest, I haven't honestly used a Chromebook since 2013 (it was a Hi-DPI laptop, and I was tasked with implementing Hi-DPI mode at my previous job), so I don't know if the platform has gotten better since then. I remember trying to edit a spreadsheet on an airplane back from Madrid, and Google Docs flailing wildly when it couldn't sync up to the cloud again.

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I also mentioned in the reddit thread that laptops aren't really an option. Laptops aren't portable for our users (they mentioned they didn't want to be seen with a laptop out of fear of being stolen), but also, let me say this: crummy laptops suck.

I know you've had the experience of working on a \$200 laptop, where the keyboard is awful to type on, the keycaps come off, the plastic bends and warps, the screen feels like it will rip off at any minute. It's terrible. You wouldn't accept it, and neither would our users. Just because they're in a poorer class, doesn't mean they deserve a lesser experience. This is one place where I feel the "Raspberry Pi" / "OLPC" solution falls down.

Please, try using those as your main computer for a month. I don't think you'd enjoy using them as your main computer. If you wouldn't enjoy it, why would our users?

Hopefully this gives you a bit more context on what we're trying to do, and where we see our product fitting into the world. Let me know if you have any questions!

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Jasper