Technology revisited: a driving force for change?

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JOHN COTTERELL (JC): Hi. Welcome to this special edition of Tech Reimagined. If you're thinking that I don't sound like the usual host, you'd be right. I'm John Cotterell, and I'm the founder and CEO of Endava. I'm pleased to be joined today by JT Batson, Co-founder and CEO at Hudson MX, and Larry Lorden the Co-founder and CTO at Illio.

Together we're going to take a look back over the years at the significant changes that we've seen in our industries and in Part 2 we're going to make some predictions for the future. Before we get started, JT would you like to give a quick overview of who you are and what you do?

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JT BATSON (JTB): Sure. Thank you John, and appreciate you allowing me to join you today. So, my name is JT Batson, and as you mentioned I'm the Co-founder and CEO of Hudson MX. We are a technology company focussed on helping the world's largest advertising agencies transform their business leveraging modern software. We started about four and a half years ago and have been long time and early partners of Endava, and excited to be with you today.

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JC: Thanks JT. And Larry?

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LARRY LORDEN (LL): Hi there. I'm Larry Lorden. I'm the CTO and Co-founder of Illio. We are a fintech platform for financial advisors and end users to help them really quickly gain an expert understanding of their investments, especially around risk and exposure, and then help them make better educated decisions. We've been going about a year, building the software with Endava, and it's been a really good ride so far and we're about to launch our NVP. So, pretty excited about that, and very pleased to be here today.

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JC: Great. Well, thanks guys. We're very pleased to have you with us, and it's actually exciting that we're working with both your businesses on creating some new technology for the future. But just as we look back a little bit, just for each of you, what's been the biggest change in technology in your personal life and in your professional life do you think? Perhaps JT kick off?

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JTB: Sure. So, on the professional side one of the things – so this is the second star-tup that I've been involved with since the get go. The first is a company called the Rubicon Project which was also an advertising technology company, and that we got going in 2008-ish, 2007/2008. And one of the biggest changes for me from a business standpoint from Rubicon to Hudson MX is actually the proliferation of internal tools that historically you would have had to build yourself. But now with the software as a service sort of ecosystem exploding to where all these internal tools we had to build ourselves and were very expensive, cumbersome and a distraction from our core product, now they're available off the shelf.

So, whether it's developer tools or whether it's productivity or workflow or project management tools or communications tools, you know I can think of the amount of time and money we soaked into building those, to where today you can leverage those off the shelf, configure them for your need and really focus your own product engineering brainpower and resources against what is

differentiated for you as a company. And so that less so a technological breakthrough, and more of what the evolution of the technology ecosystem has enabled, and I think it's a pretty profound impact for new businesses as they're looking to scale.

On the personal front, I left day after I graduated from high school to move to California for college, and have never really lived at home ever since. And having the – starting with cell phones back in the day, but really it's video conferencing. Even its early days of Skype through the ubiquitous Facetime and Zoom today, enabling me to stay close to family that has never really lived physically close to me has been something that has allowed me to pursue the professional ambitions I've had and live the life I've wanted to live while also staying close to my family which is extremely important to me.

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JC: Yes. I must admit I've experienced that from the other end with my kids all having moved out now, and amazingly they still turn up for family Zoom calls on a Sunday afternoon, which is something that I never had when I left home, it was a phone call from a callbox probably back then. So, a big change. But actually what you were touching on on your professional life side, all the tools and web services that are available, etc. I think many people probably don't realise the level to which you can build bespoke software to enable solutions now with so much that's reusable out there as a toolbox. It's transforming the way in which we all develop.

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LL: It is crazy how fast you can go now in getting started with a company. In our latest company Illio, we now have a DevOps person only two days a week, and everything is automated, all the alerts are sorted out and it costs us very, very little. And if I think back to maybe 15 years ago, when you couldn't do a release without an army of people and it was an overnight task and more often than not something bad would happen, and you've have to roll it back and it would be a complete nightmare, to these days you can get going literally with your credit card. Everything is available as SAS. So, if you're happy to use Stripe as your payment and you're happy to use AWS or Azure or any of the other cloud providers for that, you don't need to bother with DR planning. Most of your PCIFR is done with. And those are things that nobody who's been in IT misses. I don't think anyone would miss doing DR planning. You just don't need to do it anymore. So, yes, it's just not having to focus on things that aren't your core business in order to get your core business started.

Then personally I just think mobile phones. It's bound to be mobile phones, but it's the fact that they enable you to be very on the spur of the moment. I can turn up in a place I've never been before if I'm travelling, and I will be able to get my way around, I can find places to eat, find interesting things to do, without having to plan everything in advance. So, it helps me be a bit more disorganised in some ways without worrying about it.

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JC: So, what project has each of you been involved with that you're most proud of, and what made you proud of it?

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LL: I think for me, just because it made a difference in so many different ways, and in terms of an all-round project, it would be the multichannel activation system we did for Best Buy at the time. And partly because it was a little bit like a movie. It had all the odds stacked against it. The company, at the time, didn't understand the whole area of mobile phone sales, so much so in fact that on Black Friday, the year we started, they actually closed the mobile department because it was considered to be a waste of space really. And then five years later it was the most profitable department on Black Friday and responsible for more than 100% of the growth of the company.

So, from a business perspective it was huge, but also because it was a really good combination of the business and IT working together, and technology and technology really enabling meaningful business transformation. And, again, other things were stacked up like the networks, so you know the Verizon's, AT&Ts, etc. didn't really want to play with us. We had to convince them. Internally we were a bit of a land of misfit toys in terms of Best Buy was doing incredibly well and didn't see why they needed even to worry about mobile. The first week we were there – so this was a team of us came from Carphone Warehouse at the time to Best Buy. And Best Buy's a pretty awesome company, but they just didn't understand this, and after we did our pitch we said, "Any questions?" and one of the questions was, "When are you going to go home?"

So, it wasn't really like a super-welcoming environment to work in to start with, but we managed to build a team from the ground up, we built new processes, culture, new vendor relationships, and over the course of a few years really turned the business around. We introduced different ways of actually delivering projects that got adopted by the rest of Best Buy, and ultimately a lot of careers also got started there. We gave a lot of people their first kind of big break, and people went on from there to do pretty amazing things in all sorts of really well-known kind of household name companies. So, that to me was the best all-around project, just because it really had everything stacked against it. We pulled together a really good team, everyone was pretty phenomenal on that from both the technology and the business perspective, and it really had a huge impact ultimately on the business. So, that would be my choice.

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JC: It's always exciting when you can see the impact you're making on the businesses that you're working with, isn't it?

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LL: Yes, it really is.

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JC: JT, I know you've had a few experiences of that nature as well?

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JTB: Yes. Lots of that resonated for sure with me, but in particular the comment around how that experience led sort of as a springboard to all sorts of other successful careers. And certainly for me one of the things I'm proudest of is all of my former colleagues who have gone on to do all these incredible things, whether it was at Mozilla or Rubicon, or really all over the technology and business landscape. Something I count myself as lucky to be a part of versus really driving was seeing sort of a tiger about the tail in terms of the scaling of Firefox in the early days.

Those of us who are old enough to remember how unfortunate the web experience was in the late 90s, particularly the early to mid-2000s where Internet Explorer had chocked out the competition from the browser marketplace, and the internet wasn't great. And as Firefox started to get traction, the growth rates and the scaling of that product and business was just awesome to be a part of, and learned a ton. And I don't know that I'll ever see a phenomenon like that up close and personal in the huge underlying shifts it caused in the broader technology ecosystem. The impact it had on Google, the impact it had on Yahoo!, obviously the direct impact it had on Microsoft.

The growth of Firefox directly led to the growth of Google, as Google was the default browser of Firefox. The growth of Firefox directly led to the decrease in Yahoo! which at the time was the dominant portal, so much so that one of the founders of Yahoo!, I remember him coming in the

office and sort of pounding on the table screaming, "You're stealing our users." But it was really cool to be there so early and have a seat at the table while that was all going on. You know, the proudest for me, it's always when you build stuff, and some of the stuff you build gets lots of public recognition, and other times things you build doesn't, but it still feels good to pull it off, whether it's building the product, building a company, building a team.

And ultimately, and I think this ties through to what we're working on now at Hudson MX, when you help customers achieve the pay off on why they embarked on that journey with you in the first place. And so what gets me out of bed every morning is actually helping our customers pull this off, and whatever this is for them, whether it's growing their business, whether it's retooling their business, whether it's retooling their workforce, given all the changes that are going on in the marketing ecosystem, that to me is what gets me excited and why I'm so passionate to show up every day.

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JC: Thanks guys. So, opposite to that, has there been a particularly challenging project, and how did you go about working through it? Did technology have a part to play in that?

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LL: There was a project we did when I was at Carphone. Carphone Warehouse used to do billing for some of the big Telco's in the UK, like O2, Vodafone, etc. and there was a huge project to put in a new billing system, putting in an enterprise service bus, changing the whole way that the sales processes worked, etc. It was a monster project, and the issue was it was in the very early days of SOA, and people now will look back at some of the ways we used to do communication between different systems, and they'd weep if they had to do it now. But at the time we had a very early version of TIBCO, and TIBCO needed four different teams to run it effectively. You had one for kind of long running processes, one for business rules, you had another one for basic service buses, etc.

So, every single transaction required the interaction of seven teams, and this is in the days before you've got collaboration tools. So, there was no Slack, there's not even video sharing really, there's no automated build process, and so you've got seven different teams and every transaction has to flow between those different systems. And it's all driven not off nice REST APIs, but off big XML documents, and if there's any mistake the diagnose, fix, redeploy, retest cycle on that was just hideous. And so it could take you a couple of days to find the problem and get it fixed, just so it could get to the next stage in the overall flow. And that was a pretty nasty problem to solve and there wasn't really a great way to solve it at the time.

But what it did do is, although we kind of fixed it just by hammering it out and working crazy hours and things, what it did so is, when I then got to Best Buy and we came across a similar thing, we had some experience in it. And so we could do things like get a big conference room, put everyone together, get multiple screens so that you could actually see the transaction across every system and how it looked in every system, eliminate as many unnecessary systems as you possibly could and really try and get one person to own the end-to-end process. And so I wouldn't say we got it sorted in that first project, it did eventually get there, but the lessons learned from that and the scars from that, I think, helped me with the challenges when I went to Best Buy.

And then when we came back from Best Buy we actually ended up turning that problem of you've got multiple teams involved in really complex end to end processes into a product and we actually built a product called honeybee which we sold to Synchronoss, which is now DXP. And that's become a product in its own right, because what it enables people to do is it enables one person

effectively to build an end-to-end process across systems even if they don't own that end – they may not own any of the end channels, but you can actually build something where the process is owned by a single person, or a single team. And so that lesson learned went through multiple companies and eventually turned into a product. So, that would the one that didn't work, but ended up being OK in the end.

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JC: That classic thing in our industry, isn't it, taking a challenging situation and creating an opportunity out of it?

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LL: Exactly. It's solving your own problems I think, if there's nothing else out there that does that.

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JC: Did you have anything in this challenging arena JT that you could share?

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JTB: Unfortunately, and I'm not sure that our podcast it long enough to go down the litany of them, but I would say the challenges have come in sort of three different forms. One would be, we were attempting to do something technically that had not really been done before without an unlimited budget from someone like a Google or a Facebook. So, the scale problem at Rubicon of how many – essentially how much we were processing in essentially real time and from a scale standpoint and it was just bonkers. And so needing to do that without a money spigot as big as a Google or Facebook could provide was a real challenge, and so that was certainly something that – and those who ultimately cracked it, and Rubicon was one of the ones who did, helped enable what now is an ecosystem that powers, I don't know, 70/80 billion dollars a year of advertising transactions. So, pretty cool. But there were some sleepless nights over essentially bringing the internet to a halt because you couldn't serve ads quickly enough. So, that was fun.

The second challenge fit under the framework of me misunderstanding the challenge that comes when you're supporting truly legacy technology. My first job was at Mozilla, Rubicon Project was a start-up, everything I'd ever experienced was brand new. Then I ended up joining a company which was a really exciting opportunity, but all of the software, well not all of it, but a large part of the software, particularly the foundational parts of the software, was built before I was born. And understanding, how do you chart a course forward with the shackles of some of that legacy technology? And that was something that was incredibly complex to figure out what's the right way to deliver value to customers while also thinking about your own limitations?

And I'd say the third challenge is one where I've faced multiple times around the technical solution maybe isn't the most complicated, but no one ever agreed on the process. And so, so much of the business change that technology is often trying to bring is really more of a process problem than it is a technology problem. And it's one that I've seen play out in multiple instances where ultimately you could have delivered the technology as index cards that everyone wrote down on and passed them back and forth, but if you had the right process and the right framework for that, but the lack of good accountable ownership from what the business process was or the end goal that you're trying to solve for led to a really challenging software experience that no matter what technology you used, or how great your infrastructure was, you ultimately were going to struggle because of that challenge.

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JC: And Larry?

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LL: I was going to agree with JT. You could always remember that the software goes into an environment that may have people in it and process, and business objectives. And sometimes if those things aren't all lined up, no technology in the world is actually going to solve the problem. One I remember quite fondly is, we did a project to do omnichannel, kind of multichannel, buy online, pick up in store, but it was the first time that anyone had ever done that for mobile phones, the activated mobile phones. And we though it'd be a huge success and we thought we would get a large percentage of people who'd bought online and started the activation and process online would finish it in the store, and we got less than 10% uptake.

And we were like, "This is crazy. Why is this not working, and why is it not more popular?" and then we found out that the store people, they didn't get a bonus for a buy online, pick up in store activation, but they did if it was purely in store. And so people would come in to pick up their phone when they'd started the process online and the store people would just cancel the order and just restart it again in order for them to get their bonus. And so as soon as they fixed that and they said, "Actually, yes, you get your bonus regardless of where the order started," it went up to 50% uptake. So, you can't fight motivations of people, and you've got to remember any time you're delivering technology, it has to fit in with the people who are going to be using it.

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JC: Yes. I mean, just picking up on that thought, it's one of the classics with any implementation of new technology, is to take the users with you. I mean, the classic example in our space was contactless payments in the US, which was first implemented in the US a little bit ahead of the rest of the world. Instead of ending up as a market leader in that, the US went into reverse because the general public in the US got terrified that people would be able to take payments off their cards by tapping their pocket and things like that. So, the technology wasn't quite good enough and the communication of how it worked wasn't quite good enough, and they lost the public along the way and it probably set the US back by ten years in terms of implementing contactless payments.

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JTB: Yes. American Express just sent me, literally this week, just sent me a contactless credit card for the US.

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JC: Yes. It's just starting again to get rolled through, and hopefully this time they'll make it work. But, yes, ten years ago people were chopping them up and sending them back. So, anyway, we're at the end of 2020, it would be impossible to have a conversation without reflecting back over the last six to nine months and all the changes that have been wrought by this pandemic that's hit us. And I was just wondering what you guys – what's been your strategy for dealing with all the change that's been hitting us over this period?

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JTB: I distinctly remember the financial crisis setting in in '08 and it was relatively early days of Rubicon. I remember some very smart people who I respected, who were very direct in saying, "You need to plan for a very, very, very different world." And I remember in the early days of I guess late February or early March, I can't remember the exact timeframe, as COVID was looking like it was going to unfortunately consume everyone globally in a way that we haven't seen in a long time. It made me rethink everything. Rethink what is our value proposition to customers? How do we go to market? How do we engage? How do we think about our capital sources? How are

we structured? How do we communicate? You know, everything had to – you know, what are our priorities?

Everything had to sort of run through the wash again to make sure that you didn't have a set of business assumptions or strategies that were predicated on a different framework and could pick on a thread of each of those in terms of how we thought it through. But I think from a – we had something going for us in that we've always had multiple office locations, but I think one of the hardest things for us has been, we've been growing very quickly since March. We have a disproportionate percentage of our team who've never actually met another colleague in person, and when you're in a start-up that is trying to do something very ambitious and everyone's working hard hours and pushing really hard, without having the benefit of your colleagues there to cheer you on, to give you a hug, to help you out, it's hard, and I wish I could say we've perfected how to compensate for that.

We had some good stuff going into this, but we also have had some real challenges going into this around how do you bring that human element and that connection in world where – and we've tried all sort of things, but that's something we definitely – I know we miss, and are super-excited for all sorts of reasons, of course, to have COVID behind us, but super-excited to ultimately be back in the office again because there's that team element that we're missing, and we can't wait to be able to be together again to benefit from that.

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JC: Yes. I think that's one of the things we're all most looking forward to at the moment, isn't it?

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JTB: Oh, goodness, yes.

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JC: Larry, have you encountered anything in this space?

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LL: Yes, for sure. I mean, when COVID hit we were about three months really into building our IT team out or the technology team out, and so very early days. So, we've had to hire – probably almost half of our hires have been hire effectively physical sight unseen. Luckily they've worked out really well but, again, like JT we're having to figure out how you actually create a team when you can't actually be together. And so we're doing things like – you know, we do remote beers and board game evenings, things like that. We try and do team social things, but it's not really a substitute for spending time together. However, on the plus side I don't think many people are missing the commute, and so we're trying to find what the right balance is between when all this over being able to actually meet together and how often we want to do that versus actually people are pretty productive getting on with things. And with all the – with Slack or Teams or whatever, you can work really effectively even when you're apart, and the problem is how long can you do that for before you start to burn people out a little bit? And so that's the thing that we're really concerned about I think at the moment is, how do you control the intensity dial when people are at home and they can't go on holiday, they're working longer hours? You know, start-ups are pretty brutal anyway from that perspective. So, you want to make sure just to get the pacing right for people, and that you do give people a proper break and things like that.

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JC: It's interesting, isn't it? It's the human side again and how that plays a part in – technology can make things work but it can't make things feel great all the time.

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LL: And going back to the challenges question just briefly. Technical challenges are quite exciting in a way. They can be frustrating and all these things, but they're good. Human challenges and the human engineering side of all of it is the really hard part. If you can get a great team, you can pretty much solve any problem. So, really it's about how do you actually incentivise the team, and things like that? And so this is the new challenge now, how do you make sure everyone's still motivated and incentivised and encouraged when you can't do it personally?

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JC: So, the biggest challenge for me in this area over the last six months has been how to do M&A. I actually don't believe that doing M&A without meeting the people in the organisation that would become part of Endava, because making sure that that cultural fit is good is so fundamental to downstream success of M&A. And I just don't believe you can do that on Zoom calls, and so on. So, my challenge over the last six months, nine months has been how to do travel and meet people around the world whose businesses we're looking at making part of Endava. I've actually spent many weeks in quarantine on return to the UK over the last six months, because the UK rules are that when you come back from most places in the world you have to quarantine for two weeks before you can go and talk to anyone else again. So, it's been a world where the rules and the frameworks for everything we do have been thrown upside down.

This session we've been looking a little bit at technology and some of the significant changes. There's a law created by a guy called Amara that says that we tend to overestimate the effect of a technology in the short run and underestimate its effect in the long run. And you've probably picked this law up, it gets cited quite frequently. I was just wondering whether either of you had seen this law brought to life at all? Perhaps Larry you might have?

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LL: Yes. The area of just networking, bizarrely. Any time I think there's an infrastructure change you see this. So, as networking has got better, literally so many things have become enabled that weren't possible before. Right, so you could never have cloud computing without really fast networks, you couldn't have remote working without really fast networks. It wasn't that long ago that you really – you know, when you had dial up and various other that you couldn't have had the things that you've got now. And I think any time when there's an infrastructure change there are early adopters and people take it on, and it can even have quite a bit impact, but you can't really foresee just how revolutionary some of these things will be, or how taken for granted they will be in the future. So, I think so many of the businesses that are around today couldn't possibly exist.

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JC: Yes. No, it's been exciting to see some of the things that just absolutely explode once they get traction. So, we're going to move to the last few minutes of our episode, and we usually reserve this for a quickfire round. This week's going to be no different, but we're going to have a bit of a twist to it. So, guys I'm going to call out some blast from the past technology and I'd like each of you to share a ten second thought about what you remember about each of them. So, really quickfire. Start with Larry, and then JT when he's finished you just come straight in immediately after. So, here we go guys, straight in.

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JTB: Sure.

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JC: So, your first computer?

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LL: ZX81. Remember buying magazines, spending hours at the weekend typing in programmes on the terrible keyboard, getting it working, which was a huge buzz, and then as soon as you turned it off you lost everything, because it had no ROM. So, yes, that was my first computer. Great.

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JTB: My first computer was an Apple IIe that I stole from my father.

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JC: Your first cell phone?

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LL: Mine was actually a Nokia 8850 which was a beautiful aluminium phone with a slider to reveal the keyboard, and you could stand it up and when it rang it would kind of spin around, and that was pretty cool.

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JTB: Mine was definitely a Nokia. I do not remember the model of it, but I do remember once forgetting my proper calculator to a statistics quiz in college, and attempting to use the calculator on that Nokia to do fairly advanced statistics which led my professor to write a note saying, 'Excellent job showing your work. Please bring a calculator next time.'

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JC: PalmPilot or a BlackBerry, or both?

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LL: Had a BlackBerry, yes. Never had a PalmPilot.

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JTB: Had both, a BlackBerry and PalmPilot. I miss the BlackBerry terribly. They were excellent at phone calls, email and calendaring which is probably 90% of my life, and the old ones were indestructible, which given my clumsiness was super-useful. And the PalmPilot actually, the first mobile application I wrote was years and years ago, built a recruiting data for the Stanford men's basketball team where the coaches when they went on the road to evaluate players, they actually could pull up the database on their PalmPilot to see the player, the player's mother's name, their dog's name, their birth date, whatever they needed to know so that they could have an effective conversation with that kid when they were on the recruiting trail.

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JC: And then floppy disks?

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LL: Yes, 5¼ inch floppies. I actually had an Atari ST and I actually bought a second floppy drive so that when I had some games that had multiple disks I could save time not having to eject one disk and put the next disk in. I could actually have a couple of floppy drives there, but yes the old 5¼ before the slick new 3½ inch disks came in. I can remember those very well.

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JTB: On the 3½ inch ones, I used to try to grab as many of the AOL direct mail pieces with the disks attached, wipe them and use them to store whatever I had, because I was too cheap to go buy disks myself.

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JC: I love the meme that I saw the other day. So, son's looking at his dad who's holding a floppy disk and he goes, "Cool, you've made that to look just like the save icon."

So, anyway, thank you all for taking the time to join us and look back at technology with us today. Stay tuned for Part 2 next week when we'll turn our focus to the future and try to predict what is in store for the next decade.

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