Emilio Alvarez  
What's your best shot, John? What's your best shot, John?

Jon Keller  
No, I, I can't even get to the basket anymore. I used to shoot threes. I can't get it. It's too far away. The muscle memory goes.

Gabriel Almeida  
How's it going, John? Nice to meet you.

Jon Keller  
Nice meeting you, Gabriel.

Gabriel Almeida  
Great.

Emilio Alvarez  
Oh, so thanks for getting to meet with us. I think we sent out some high level context, but to give you a bit of additional context, my name is Emilio. I am a. I just graduated my MBA here at MIT month and a half ago now, which is pretty crazy. And I met. Thank you. I met Gabe. I think it was like the first, maybe second week at the Latin American retreat. I'm Mexican, Gabe's Brazilian and ever since we've been working on different entrepreneurial ideas. I actually came into MIT having like filed several patents for telecom. We have since made the heart speaking basketball a pretty big pivot and that's part of why we want to talk to you. But Gabe, feel free to say a bit more about yourself.

Gabriel Almeida  
Yeah, nice to meet you again, John. So I, I am originally from the US but I was raised in Brazil, my family's from there and we come primarily from telecommunications. Both of us are backgrounds, but we are pivoting out of that industry. Let's say we're both passionate about entrepreneurship. We're currently under bills mentoring at the Martin Trust Center. We're part of like the staple startup incubator Delta V. And we're currently exploring a thesis around business and process outsourcing for small to medium sized architects and interior designers in the US and other players in that ecosystem too. So that's what brings us to speak to you today, John, to really take, get your take and understand how you see outsourcing in the industry.

Emilio Alvarez  
And John, so I can be focused so we can focus on the meeting, do you mind if we record using an AI tool so we can take notes that way?

Jon Keller  
Sure, no problem. Let me also briefly tell you about me. If you haven't seen our website, we started the firm in 1988 and MIT has always been a strong client of ours. I've done probably over 200 projects there, mostly research, search laboratories, nothing in Sloan school, but a lot of our work is for school of science or a school of engineering and in multiple buildings, a lot of it in the main group. So currently we're right now doing a lab in.

Emilio Alvarez  
Sorry, can you say that again? You're doing a lab where.

Jon Keller  
E25, which is. Yeah, it's around the Corner. We had actually completely redone that building in 19 and 2005 and that it was a 1980s vintage building and needed a lot of help anyways. So that's kind of my background. I'm actually an engineer. My degree, civil engineer, structural engineer. Got into architecture when I was in college, decided to take my engineering degree instead of going on and get my Bachelor of Architecture. But I continued on and became an architect.

Emilio Alvarez  
And what parts did you enjoy the most? And which ones do you think could.

Jon Keller  
Get a little better in architecture or engineering?

Emilio Alvarez  
Well, you work at the intersection, which is where I think it's interesting.

Jon Keller  
Well, I think in academia, in education, at least back in the. In the 70s when I went, there wasn't a lot of. It was still a lot of theory, design theory, history, as far as the education. So a lot of design studio. So you know a way to learn how to design, solve problems and be creative. But they didn't teach you much about business or to your point, a lot about outsourcing, a lot about resources that my dad was just starting. Then technology really had. It was very old school. It was hand drafting. There's a lot of labor to get a project done. Back to then, if you wanted to do a $50 million project, you need a team of about 20 people. Now you can do it with. Oh, wow. Yeah.

Jon Keller  
Now with AI creeping into the discussion, I'm struggling myself, you know, being. Being a little bit of a Luddite. The transition from hand drawing, which I learned, very iterative hand drawing. So it was labor intensive. And that's the hand brain kind of whatever relationship there is. You could Google that. There's lots of architects who talk about that is the way I learned. And I just can't design on a computer. I don't have the.

Emilio Alvarez  
The feel.

Jon Keller  
Yeah. Or the process is different. I'm not comfortable with it yet. The people coming out of school are and can do it. The problem for me and probably others is that when you hand draw and design, everything's in front of you. Your last iteration is next to you over there. It's on the desk. You can see it. You pin it up on the wall. It's always in front of you. You don't have to scroll between pages or screens and things like that. So you're always looking at something anecdotally working on something else. You know, often you hear stories about the ideas that come to you while taking a shower, you know, because you're not thinking about the problem, but the solution creeps in because you're not thinking about the problem. Right.

Jon Keller  
So I think that's, we're at an interesting point in architecture because of technology. What I found as I. My career has overlapped, all this new technology from the old way, there wasn't much improvement from the 18, 17, hundreds, whatever, how far back you want to go. The renaissance of how you drew and designed and built it was always by drawing. It was artists and trades building it. And it was kind of was not much improvement up until cad.

Emilio Alvarez  
Right.

Jon Keller  
So.

Emilio Alvarez  
And out of curiosity.

Jon Keller  
Yeah, go ahead, sure.

Emilio Alvarez  
Sorry. Because you mentioned a little bit about AI. Are there parts, particular parts of architecture and like the entire design process from like conceiving of a building or a house, whatever you're designing. Right. All the way to the interior design, those hands offs interactions, the builder. Do you think there are particular parts that are more or less prone to being done with AI?

Jon Keller  
Yes, absolutely. So for lack of a better analogy, there are a lot of bumper shots in design. So there's a. Is that because I design for a lot of scientists who come from a mindset that there's a answer to a problem, one answer to a problem. You know, you might not be able to get there without a lot of research and experimentation, but there is one answer, there's an explanation. In architecture, there's hundreds of ways to solve a problem. So, and the best solutions, not necessarily the right solution, it's a solution that was affected by many different influences. So there's building codes, there's client needs, there's costs, there's schedule, there's limitation of materials, there's. There's just things you react to constantly and you can't plan for. So you know, the end building, the end, whatever you're doing usually is not linear.

Jon Keller  
There's no way to predict human interactions. Your building inspector's sick, he's not going to get there for three weeks. Your schedule is extended, your contractor won't come back. You know, there's so many different things that end up having you to pivot and do something different. So AI, I think my understanding, I've only used it a little bit, but can see trends, can see patterns and evaluate much faster. We can obs. You know this, you shouldn't do a three story building or whatever because I have this will. It's not efficient or whatever. So that I think there's room for AI to come in and advise and give better outcomes because they can go through historical data faster and understand it. I would caution that it can't design. And here's my fear of that is that.

Jon Keller  
And this actually goes back to the first Google search engine. Way back whenever it was, or mid-80s or 90s or whenever it was, it flattened things. You asked a question, everybody got the same answer, everybody ended up doing the same thing. So if everybody uses AI, the questions are the same, the answers are the same, all the billings will look the same. And to me, that's a problem, I think.

Emilio Alvarez  
Right.

Jon Keller  
You know, there's personality, there's human error, there's. There's all sorts of things that create better buildings because of mistakes, because of just human nature, which AI you can't build into AI yet, I guess. And so I think find a way to use AI that supports but enables architects to work faster to eliminate those dead ends that we tend to go down before we understand that it's not going to work would be a big time and money saver for everybody. Yep. Still giving, yet still giving us the room to design in a human way.

Emilio Alvarez  
And question, like, do you feel like AI in the design, the 2D, 3D rendering, all those kinds of things, do you think there it's going to. On the spectrum of like, it's never going to replace humans to. It's totally going to replace humans. Where do we sit?

Jon Keller  
Yeah, partial. I don't think it'll ever totally replace again. I think there needs to be some oversight to decide that. This is not what I wanted. This is not what the client wants. I don't think there's going to be a way. It's. It's a very human thing to decide if I like blue or red. I don't think AI can predict that for an architect or a client, whether they like that more. They could present them what other people have done or what the likelihood that red is not going to be like. So I don't think there's a replacement of design personality. For instance, you know, like Frank Gehry is going to do a design like that versus somebody else who doesn't do that but does something different. And that kind of diversity I think is important. But again to everything looks the same.

Jon Keller  
It starts to, you know, be kind of a utopian gotcha landscape. And you just. It's not. I think it just, it's not as human. Now that said, I think that you could see a future where AI does drawings for you better. Both rendering drawings. So what is three dimensional models.

Emilio Alvarez  
Sure.

Jon Keller  
And working drawings. Go ahead, Gabriel.

Gabriel Almeida  
Yeah. Let me ask you, John, so about like the 2D drafting, right. Because I don't Know, from what my understanding of AI, I see it closer to creating like 3D renderings than what you really need for 2D drafting, especially that iterative process. Right. Do you agree with that or no?

Jon Keller  
Well, yes and no. So where we've evolved to in the industry, which I don't think is a good thing, but it's where we're at. Once we got into CAD, there was ability to take a 2D drawing from another job, cut and paste it into the job you're in because it's similar and saves time. Strong already. Not necessarily the same thing that you need, but you can tweak it and use it as a template. But a lot of times you just cut and paste it and leave it there, saying, I'll get back to it, and you don't. And then that leads to problems in construction.

Jon Keller  
So I think that having a database of, you know, millions of these details or floor plans, 2D drawings, elevations at its disposal, AI, if you know how to ask the right questions, it can give you those and you can use them as a template. I think architects in general copy. We don't invent. We see what looks nice and we copy it. So to that extent, AI is doing the same thing, but you just have to ask the right questions. Otherwise it's going to lead you down a, you know, kind of a misleading path because it's going to give you what you asked for, but you asked the wrong question. So I think it's being used probably by the firms that have a little more resource to spend money on research and development.

Jon Keller  
I think they see it as a marketing tool more than a resource to help them. They'll go into a job interview, say we use AI and we can do faster and smarter and cheaper than anybody else because we use it, we've been using it. We have a better team of techs that do it well, that kind of stuff. But I'll tell you. I'll tell you a story. I mean, it may be relevant these days or not. This was a few years ago. We were doing. We were an associate architect at mit, and you might have seen this project, pdsi. It was a physics, theoretical physics building that sits in the courtyard of the main group building. We built within the main group building. Basically, it's a beautiful little modernist kind of building. Under a skylight. You go down.

Jon Keller  
If you go down the corridor, building six, you can get into it. There's a little door that gets you into the courtyard. So were working with a very big firm as their partner architect and One of our talents was we do hand drawings and renderings. Very much cartoony renderings kind of thing, but, you know, very much.

Emilio Alvarez  
But the start of the process.

Jon Keller  
Right, yeah. Animate. We can animate a solution or a problem in a hand drawing we felt was much more effective than computer renderings. And computer renderings were very sophisticated back then. They were 2008, 9. And the other firm, big firm, had big computers that could do these things. So they did the same renderings that were doing. And theorists, theoretical physics basically said, we can't use the computer renderings. They're very cold. They don't tell the story correctly. It's not what we want. We'd like our renderings. We do. So there's a. All by way of saying there's a loss of humanity, for lack of a better word, in the computer renderings. And I haven't seen a computer yet to do one that you look at and say, even. Even if it's photorealistic and you see those out there, you say, was that newer?

Jon Keller  
It's still something cold about it. And I don't think that's been solved yet. And my clients say the same thing. They can't. Even if you walk them with 3D glasses through a building and look around and say, this is what we'd like to do, and this is based. Unless you're in this space and it's built, we can't really understand it. So I don't know where we're gonna. If we're ever gonna get there, because I think there's a disconnect between how the brain sees things. Reality working, walking around in a 3D space versus an emulated 3D space. I mean, you can play those video games and everything fantastic and wonderful, but trying to figure out a design is hard. It's. It's very hard. And so AI at some point to justify a decision. And there's thousands on. Even on small jobs.

Jon Keller  
Everything from a color selection to. To the swing of a door all has reason. All has to be thought about, and all have. You know, it has to be. You know, I often get the question, you know, I. We give them a. We give a client a color palette, material, selections, and look at me. And they sell well, why not green? Why blue? I don't have a reason.

Emilio Alvarez  
It just feels better.

Jon Keller  
It just. I think blue looks better. Well, he said, well, I need a reason, and you don't. I can't give a reason other than to say, you know, the color chart is complementary, says, but it's still very personal. And so AI, I don't think we'll get there on that kind of stuff because again, it's objective and different from each.

Emilio Alvarez  
And do you think that subject, at what point in the process do you think that subjectivity starts, like, creeping in more and more?

Jon Keller  
That tends to be from the start. I mean, again, it, the. You start by trying to figure out what the client's needs are. He'll come to you, I want a house, three bedrooms, two baths. And you ask, you know, you try to dig into why he wants three bedrooms here and he's got one kid, okay, whatever. And you start to piece that together. And then the more you listen, you can start to make better decisions. You can say, okay, well, you don't need three bedrooms. You only need two bedrooms. Really, right now, you don't have a second kid. We can make a future addition there and that way we can stay within zoning.

Jon Keller  
So the more you understand about that's bits of the subjectivity, client preference to talk them out of something, what they want, because the architect has the experience to know they can't afford the three bedroom. And that'll present zoning problems or other issues. So, but it's subjective because don't tell me what I don't want. I want this, I'll find the money kind of a thing, right? It starts at this, at the beginning. So you. And then it goes all the way down to the end. And you're, Everything has to be told to the contractor, right? From, you know, all the way down to the colors they're going to be asking for. So you can't leave any conversation not there.

Jon Keller  
So another thing AI can do, I think which would be, which I've always tried to do manually with research labs, is map out those decisions sequentially. What's important to decide when. What are the questions that you need to ask the client to inform the design? So. And again, it's not linear. You can try to make it linear, but you're always cycling back. For instance, you can, there's three, three stages of design that's historically gone back forever. It's baby steps we call schematic design. It's a very high level, pretty much not detailed of anything, but enough to know what the cost might be.

Jon Keller  
And then once they can afford that, you go to the next page, which is called design development, where you develop the schematic to a little bit more detail so you can get a little better cost, understand the constraints a little more, and Then you go. And that's approved in the process. Then you go into contract. But what happens is, you know, you do this schematic design and suddenly the cost is too much and there's a reassessment of priorities. Maybe I only need one bad. Maybe I only need the two bed and you got to go back again. But it's better than getting to break ground and realizing you can't afford it. At that point it becomes very costly to retreat back and redraw and you lost the schedule and all sorts of stuff. So.

Emilio Alvarez  
And out of curiosity and that like back and forth, there's like a lot of different people, workflows that have to happen. In your opinion, which ones are critical to have in house and which ones could be near shored.

Jon Keller  
Okay, well, I think I'm a little bit biased on it because I have a small office and all we have in house really is the architects, designers and the people who do the CAD for us, which tend to be architects, but entry level. So we sub out all our specialty work. We sub out our mechanical, electrical, plumbing engineers, structural engineers, estimators, interior designers, lighting designers, acoustic designers. We don't necessarily need them for all our jobs. So for us to have them in house would be hard to support. Got it. So we, you know, I think if I could, you know, if big firms do that, big firms have all those, most all those under the same roof. I've worked for firms like that, the structural engineers sit around playing crosswords.

Jon Keller  
They don't have the work to support there, but they have enough money to have them in house, which is great because often right now the half my job, more than half my job, trying to get all those guys that are outsourced to answer my answer.

Emilio Alvarez  
Interesting.

Jon Keller  
And. And the, and it's because they're busy.

Emilio Alvarez  
Do you typically communicate with them just like literally?

Jon Keller  
No. Well, used to be. I'm still old school. I try to call them. They won't answer. But, you know, it's. It's mostly email. There is a. You might be familiar with it. There's a lot of firms offering management software for the construction industry.

Gabriel Almeida  
Yeah.

Jon Keller  
Might use somebody called Ebuilder. I'm not a fan, but a lot of communication goes through that. There's something else called Procore. Yeah. Heard about that out there. Yeah. It's nice to. Because theoretically everybody's. Everything's in one place. In the proper folders you can find things. But a lot of stuff gets posted there that's invisible to me anyways. I have to get in. Oh, your password. Need to reset your password. Not working. It's not letting me in. It's frozen.

Emilio Alvarez  
Gotcha.

Jon Keller  
So the days lost trying to get back online. I think it's supposed to save time. Personally, I don't think it. I have another anecdotal story. We had an MIT job, Building 31. We were redoing the entire building. We were waiting on. Contractor was waiting on steel to be delivered for the addition were putting on. He calls up the steel subcontractor to confirm delivery date, which was supposed to be the next day. Contract said. I haven't even started making this deal yet. Because you haven't answered any of my. What they call RFIs, which are my questions. Well, they all were answered. They're all on eBuilder. It's just the guy never went to E Builder to look for them. No one checked. No one gave him a call. So, you know, there's.

Jon Keller  
There's somewhat of an assumption with this electronic communications that people are getting it, they're reading it, they're understanding it. So there needs to be a second piece to all that which confirms that things are getting to where they're going and being looked at. That is something that's not happening. Yes. My communications with all these subs are by email and they don't respond really. So it's like one email, two mail, three emails, still haven't responded, then a phone call and then it lasts a week.

Emilio Alvarez  
Right.

Jon Keller  
I think, I think the. But that's the way the industry has gone. It's a specialty construction. Specialty architects are kind of gathering all these specialties, whereas we used to know a lot more about how construction works, how building windows go together, the waterproofing, all that. We used to be very good at understanding those details. We don't anymore. We know who to hire. We will hire a sub consultant that has used to be part of our work. We'll hire them to do that envelope design, to do that roof design.

Emilio Alvarez  
And would you guys ever consider outsourcing the. The schematics and the 2D and 3 3D drawings that are currently doing in house on CAD?

Jon Keller  
We. We've. I get barraged by services, usually from India that offer those services. I don't. I. Again, I, I shouldn't say it's. It wouldn't work because I haven't done it. But I tend to think that unless you're in the meeting with the client face to face and looking at them and understanding what that person wants and the nuance of that and that kind of gets embedded in your head. It creates a different schematic than somebody india that's kind of trying to interpret what you need. I think there is a need, at least with schematics, to be intimate with your ear, so to speak, to your. Your client's needs. And you get a better design for that and you can gotcha what you want, what they want. Now after schematic going into working drawings, maybe.

Jon Keller  
But I have a feeling that it will create more work for architects for me to do that then the efficiency of farming that out at a lower expense, probably for labor than I'm paying the people in the office. A lot, a lot of architect firms, this goes back to the old days of drafting. You just had a big drafting, and the principal would walk around and look at people, what they're doing on their drawing table, and they could see it, and they could discuss things in person and see it real time. If something's going off the rails for me, you know, most of our projects are small. If a young architect starts going in another direction, it's not good. Just spent my schematic fee, you know, and I have to redo it on my nickel.

Emilio Alvarez  
Gotcha.

Jon Keller  
We're all in a big office. Issue is what we have no walls. I can see everybody. I can hear their phone calls, I can hear their discussions. I can look at what they're doing on the computer. They can walk over to me and say, I got a question answered like that. There's a certain efficiency to that. So, you know, the more that you outsource, there's. There's a delay and there is a risk that they didn't understand what you want, what you need.

Emilio Alvarez  
And do you think that's the case? Because a lot of these folks are in Asia and like there's a time difference or no. Or is it like literally just physically.

Jon Keller  
Being there, physically being there? I think that there is some efficiency for just being able to see and hear what people are doing. There's also a loss of, I think, responsibility. I don't know what else to call it. The. This firm that you're stubbing the work to is not responsible for the project for the most part. They're just giving you something that you need. And they got thousands of other projects perhaps, and they just need to get yours out by a certain time and then they'll wait for your comments back kind of thing. If it were something could be done that emulated that in office experience, you know, that would be valuable. I think with this with all my consultants.

Jon Keller  
I used to go down to the engineering office and sit with them and look through all their drawings and go through it all in person and have them explain to me this, that and the other thing. There's a lot that I don't catch that I can't offer a solution to if I don't understand it. A lot of the engineering stuff is repetitive and they just do what they do and know. So you have to challenge them sometimes and say, well, why can't we do it this way? We usually do. I said, well, if we did it that way we could save a whole floor or something. I don't know. I mean they just, they tend to think of things differently the way than we do. The expression is think out of the box kind of thing.

Jon Keller  
I am an engineer, I don't want to disparage the way they think, but they think very much in that way because that's what they know. So if you challenge them to say, well, rather than hot water system or geothermal, they won't do it unless you challenge them. But you can't challenge them unless you understand what they're doing. So I guess going back to your question, you know, yeah, it would be great to have all these firms in house and be able to do it. Then I would understand why they're doing certain things because they're there.

Emilio Alvarez  
Gotcha.

Jon Keller  
But that economic model, the financial model, to do that for a firm that's less than 5,000 people is not really doable. There's a lot of waste there. There's a lot of people sitting around doing nothing.

Emilio Alvarez  
That makes a lot of sense. So John, we do want to be respectful of your time. We know that we've gone a little over.

Jon Keller  
Okay, yeah, I can talk a little more if you guys want. But yes, I think we can talk again.

Emilio Alvarez  
Yeah, I think what would be amazing John, is if you know other folks in the industry that we can talk to as I mentioned, like we're still super green, very much in like want to learn as much as we can very fast. So anyone, you know that you think we can talk to better understand when and when it doesn't, when it doesn't make sense to do outsourcing. What the process look like, the hands, handoffs, all those kinds of things.

Gabriel Almeida  
Specifically John, we're trying to focus more on conversations. Although of course like all are useful with more small to medium sized shops because we think be potentially more open to and interested in a wider variety of process outsourcing.

Jon Keller  
Well, let me think about it. I, I do, you know, we, I have a lot of friends. Let me think about the smaller firms that I do know.

Gabriel Almeida  
Yeah, it could be designers too, right? Mill workers.

Emilio Alvarez  
GCs, anyone in the ecosystem essentially.

Jon Keller  
Yeah, got it. Yeah, I, let me think about that. I have a firm I'm thinking of in Rhode island that might be much smaller firm but a truly a very good young designer that might have a different perspective, younger too so that she will have a different opinion on using technology than I do. So yeah, let me think about it and then I'll send you something. Well, let me check with them first and then I can send you something.

Gabriel Almeida  
Thank you so much, John. Appreciate it.

Emilio Alvarez  
Thank you so much.

Jon Keller  
No problem. Happy to talk anytime.

Gabriel Almeida  
All right, take care. Have a good weekend.

Emilio Alvarez  
Appreciate it.

Jon Keller  
Bye Bye.