Constellations Podcast

Episode 43 – User Experience Design, Space System Standards and Enterprise Ground Services

Guest: Michal Anne Rogondino, CEO & Founder, Rocket Communications– 26 minutes

John: Welcome to Constellations, the podcast from Kratos. My name is John Gilroy and I'll be your moderator. Today, we have Michal-Anne Rogondino on the podcast. Michal-Anne is the CEO and founder of Rocket Communications, but there's a whole lot more to her than that. She has a Bachelor's degree in user interface design and she started her humble career at a little place called Apple. That's a pretty good background just there for starters. Michal-Anne, how are you today?

Michal-Anne: Hey, John. I'm doing great. Thanks so much for having me on your show.

John: Well, we're going to jump right into the obvious question. What the heck is user experience, to begin with?

Michal-Anne: That's a good question, because even in our industry, people have different definitions for it. I guess the best way to start is to give you the definition that our company has embraced. We go back to the core. Our definition is actually one that was coined by Don Norman in the 1990's. And Don is considered the father of UX design. He described user experience as the full experience a person is having with a digital product. When he says full experience, it literally is that. So what is the person thinking, feeling, able to accomplish, when they're using a product.

Based on that, user experience design is the act of creating a user experience. An analogy that we like to use, that's my favorite, is architecture. You know how an architect designs a building, but they don't build it. A contractor builds it. In this case, a UX designer creates that user experience, that digital product design, and an engineer will build it. So it's a really collaborative and agile process with engineers and designers to create a user experience. Based on that then, the way that we actually create user experiences, I think this is also a really important thing for your audience to hear, because I think a lot of people have been hearing about design thinking, and design thinking is really a process of problem solving. It's how to take into consideration a user and their needs and go through a process that actually then brings you down a path to solve whatever those problems are. Design thinking is the core of user experience design. It's something that is learnable and it's something that I think is important to be embraced by any company that's designing software.

So in a nutshell, user experience is literally what a person is experiencing using a digital product. User experience design is creating that user experience. And then the design thinking is that process that is used by the user experience designers to create that user experience.

John: And so you can put it all together into a, user experience design, into a system, is that right?

Michal-Anne: Yeah, into a system. The user experience is, really it's just a term to define what a person is actually doing with a digital product.

John: My listeners, listeners to Constellations, are obviously involved in satellite and space world. So let's take a look at this concept of a user experience design system. How would that apply to space systems?

Michal-Anne: I think it's important to explain what a user experience design system is first, because that's really the core of what we're talking about here. A user experience design system is a tool and processes that allow a large group of people to design user experiences at scale. What I mean by that is, a commercial enterprise company like SAP or IBM, they've got an enormous number of applications that they're responsible for creating and they need to do this in a really quick way, a consistent way, and a very professional process that they need to put into place. That's what a design system provides, is the way to essentially create a single source of information for a large audience to be able to use in order to design consistently.

John: From my perspective, I think of a deep focused insight into something. If you look at architecture, you previously mentioned that, if you look at something like the Parthenon in Greece, well you see that and it hits you over the head. Yeah, this looks great. Now I could probably show you 12 other examples of architecture. You're going to know within a half a second that there's something wrong there. So this experiences is arts and sciences isn't it? It's really understanding human beings, but also understanding some of the technical aspects. So this is a balance you're working here.

Michal-Anne: It really is a balance. A designer for software needs to understand how that software's being built. It's not just a matter of what does it look like, what are the colors and the icons. It's how they're going to be being developed, but also really how they're going to be used. So the technology is one thing, but there's a psychology to understanding people and how they absorb information and what the context is that they're using this information in, too.

John: One example I like to use is that, let's say I'm up on the Appalachian Trail, listening to a podcast. What can happen to me is that, if I get a phone call, that

podcast will go on hold. I can take the phone call, hang up and it'll renew right where it was before. Someone really thought of user experience for that simple product, didn't they? It looked real simple, but very complex to accomplish.

Michal-Anne: Yeah, it really is. In the example you just gave, is one where a lot of people wouldn't even think about user experience without having gone through it.

John: Right, someone like you sits down and really looks at human beings and figure out what people do, how people use a product and then apply it without me even thinking. I've never even thought about that, interruption like that.

Michal-Anne: But you thought about it when it didn't work.

John: Yeah, it didn't, but it's so smooth, it's just like, wow, who thought this up. Well, that took three years to figure out, I'm sure.

Michal-Anne: Or it didn't-

John: Yeah, yeah.

Michal-Anne: They've been designing the software, right? They might have thought it through in the beginning.

John: Tell me about Rocket Communications. How are you involved in redefining user experience in design for space systems?

Michal-Anne: That's a really good question. I think we're not necessarily redefining user experience for space systems. What we're doing is just exposing user experience design to those people who are building space systems. From the commercial world, this is just norm, right, what we're doing, our basic best practices and ways of actually solving software problems for users in standard ways. What we're doing is bringing that to the space domain.

John: What's unique and what's special about user experience for space systems? Very similar to other systems, or unique?

Michal-Anne: Well, there's both, really. Most software applications have the same components to them. They're built in very similar ways. You'll have a text box or icons in general, a dialogue box. Those are things that almost every application has. What's unique about space is that there are things that are very unique to that domain. An example of that would be a timeline or the types of icons that are being used. You don't end up in a word processing app, you need to actually see a satellite as one of your icons, but it's going to have meaning to people who are using space applications.

The other thing I think that's interesting about designing for space, or at least DoD space, is that there is a lot more importance on making sure that you communicate in very clear and effective ways. In a word processor, for example, something that a commercial enterprise company would build, it's important that you help people with their work and that they understand that if they select an "a" icon that it's going to give them something related to text. But when we're designing for space, first off, things are usually happening in a way that's really important, so making mistakes is going to be resulting in really bad problems if you don't do it correctly. In supporting that, you want to use colors that give enough contrast so that somebody doesn't make mistakes, so that things are very crisp and clear. We follow mil standards, military standards, in the designs that we create. Same thing with icons. There can't be any ambiguity around an icon and what its meaning is, status indicators, so that somebody understands whether something's actually an alarm or just off-line. So those are the kinds of considerations that need to go into space apps that are different from commercial apps.

But overall, it's really about how people are using technology, now somebody's using an application that comes into play. That's what our company is really good at, is understanding how people use applications, what type of components are the best for different types of information and interaction and then taking that and expanding it into what is the user doing with this specific domain. That's really what the difference is with regular, commercial apps and space applications.

John: I'm glad you brought up DoD, because I have a question about the Air Force. I'm in Washington, D.C. They're just down the road here. I'm pretty sure that they're embarking on their Enterprise Ground Services effort. They're kind of re-architecting some of these little funnels or stovepipe situations. They're trying to use a common set of enterprise services that can support all missions under a single set of standards and guidelines. I can see that's very applicable in cloud situations.

Let me focus on you. As a woman owned small business, you have a fairly important role in the U.S. Air Force's Enterprise Ground Services effort. Tell us more of what you're doing there.

Michal-Anne: We're actually doing quite a bit. We've created a space app, in particular UX design system. This is for SMC and it's called Astro. To give you just a quick background, we ended up working as subcontractors with Harris in 2015. So this has been awhile. They brought us onboard to actually create guidelines for some SATCOM applications that they wanted to make consistent, and they wanted to update and modernize. In the process of doing this, we ended up getting exposure to many more applications than just the ones that we were focused on for this one project. Through this exposure, we realized that the

need for consistent and modern applications was a big one at the Air Force. In 2016, we actually went on essentially a crusade to bring education of the importance of UX design to a much broader audience. Through that process, we were introduced to General Hyten, who also agreed with what we were trying to do.

So he made an introduction to Colonel Bracy for us. He was the one in charge at that time of the EGS program and wanted to take advantage of the investment the Air Force had already made in doing this SATCOM design system that we'd created. Now we're working on re-designing EGS applications and bringing those designs back into Astro, so we can share that information and scale for people to now design space apps for the government.

John: To quote Ron Burgundy, this is kind of a big deal. I mean, this is a big deal here, isn't it?

Michal-Anne: It really is a big deal.

John: Yeah, it is, though.

Michal-Anne: I think recognizing that this was necessary and then getting the support that we have from SMC has been tremendous. What we're doing is because of the importance of this information, trying to get a large number of people designing consistently. Astro is free. It's open source. It's available online, no passwords. It's astrouxds.com. So people can go there and get this information. We've got everything up there from code to icons to components, web components that people can then download and start to build their applications with. So it is a big deal. It's been a really exciting project to work on.

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There's a guy named Simon Sinek and I think he has a book, or a quote, it's, "Always start with the why." And so my question to you is, why is transforming space systems user experience design important to the Air Force. I mean, why? Why is it important? What were they trying to meet?

Michal-Anne: At its core, we're trying to create systems quickly and professionally so that our airmen are able to fight and win that war that extends into space. I know that's maybe a buzzword, and a phrase that's been passed around, but we take it really seriously at Rocket. Because those airmen are getting the best technology possible, and we want them to have the easiest, best access to it. So well

designed user experience is the best way to get them to make the most of the technology that's being developed right now. Our airmen, especially our younger airmen, they expect very high quality user experiences with this technology and that's not been the case. They haven't been getting what we think is that best version of these tools. What the core thing is with making these applications accessible and usable is to find the savings in training. When a person is actually exposed to a really well-designed application, they can learn it very quickly, and they can get to doing their job very quickly. That's the very first thing.

But the next one is, when that user is getting trained across systems, in this case what's happening is, each one of those apps that are available currently, actually, is designed by the engineers who are building them, and they're also being designed and developed by different companies. So you end up with a stovepipe situation, where that user is getting trained on one system, and that's taking a long time, and they're not able to spend as much time on their mission, because that product is not well-designed. Now they go to the next system. They migrate with their career path to the next system, and they're having to learn this all over again, because that application is completely different than the one before.

What we're doing is saying, okay, almost all of these applications, because apps have so much commonality, especially these space apps, make things that should be common, common. And that's part of the Astro UX DS system. Make these things that are supposed to be common common. And now that information from the first app the airmen learned is able to be transferred over to the next one and they can focus now on learning just the mission unique information. So there's a savings in time and a savings in cost by actually doing this for the Air Force.

John: So this whole concept of a single one size fits all user experience, like I said earlier, easier said than done. How does this Astro UX DS you're developing make that a reality? I mean, you go from this very difficult concept to something that is usable and doable today.

Michal-Anne: Actually, a UX design system doesn't create a one size fits all user experience. What Astro is doing is they're providing a baseline and guidelines for those things that should be common to be able to be designed in a common way. As I said earlier, 70 to 80 percent of all apps are using the same common elements, but each app is unique. It needs to be designed for those users' needs. That's where the design thinking piece comes in. So you need to understand what those users' needs are, what the, maybe in this case, the mission is, and how does the application support that. But yeah, so what's happening is that each one of those things that we would consider common and, in many ways, obvious, is currently being designed in a different way. But with Astro, we are

providing not just the specific components like buttons and icons, but we're also providing things like, let's say a timeline.

So a timeline is consisting of, obviously, a time, presented in most cases in a very horizontal way. And there's certain common things that are going to be in every timeline. So what we've done is created a baseline for this, and now the companies who are designing their applications, they've got very specific things that they want to be able to track over that time. We're not telling them what to do with that, but what we're saying is, Here is what we would consider the common way to show this. Now start from here. That's what would create the consistency.

We're not just saying cookie cutter, use this. We're saying, start from here, try and take the basic principles from this, and if you apply those, now that understanding, that transfer of knowledge, is going to happen for those airmen who are learning it.

John: Yeah, because there's consistency, there's probably kind of a similar hierarchy, all of a sudden it's easy to move from one area to the next, or different type of systems.

Michal-Anne: Exactly.

John: Yeah, so from your company, I mean, you're running the company there, what challenges do you see in just trying to come up with a design like this? Do you have technical challenges or cultural challenges?

Michal-Anne: Working for the government has its own unique challenges. The first one is always the contracts. That's just something that comes with the territory. But it is usually one of the first things that comes up is, what kind of contract are you using. The next one is actually budgets. A design system is a living system. It needs to be consistently sustained and added. Technology doesn't wait. Technology doesn't take breaks. With Astro, what we're doing is keeping our code up-to-date, constantly adding new things. We're working on creating a larger library, mapping guidelines, things that are going to give information to that wide space design, or space app design, audience.

The other thing I'd say that is a challenge and it's something that can definitely be overcome, is top-secret clearance. What I mean by that is, because design is user centric, what we want to do is see how operators are actually using these systems in action. Obviously, most of this work is being done in a secret environment, so being able to watch what they're doing is a challenge. When we did our first project with the SATCOM project, the way that we did this was, we had government representatives and a small set of our representatives go in

and watch the operators do their job, and then we were able to create vignettes so that this information could come out with some use cases and workflows that we were able to design to. And then they were brought back into the secret environment to get worked on.

But beyond that, one of the things we found is, the vast majority of these applications don't need to be worked on in secret environments. What's happening is that the secret piece is really the data, not the use cases, not the actual application itself. So in that challenge, it's been convincing different companies and teams that we don't have to have the clearance to work on their applications. What we need them to do is just take out the secret data and then let us work on what those use cases and workflows are.

John: Yeah, yeah, strip out the important stuff. When I think of what's going on in the satellite world today, I mean, you look up at the sky, there's maybe a couple thousand satellites, a couple years, there may be a couple ... four or five thousand satellites. No one really knows. The only way to manage that is through, I think, automation and autonomy. That seems to be one of the goals that the Air Force has here. So how does this concept of automation and autonomy fit in with user experience design?

Michal-Anne: First off, people are not going to be replaced by computers, especially in this domain. We're always going to need somebody who's able to problem solve. If something goes wrong, they're going to need to have context in which they can actually understand what's happening and be able to make those changes or address those problems. But really, what's happening is, these apps are going to have to be designed for these new ways of being used. It's not like because things are automated, we can just gray out the areas that the computer is now taking care of. So we're going to have to completely rethink how they're being designed, similar to what you talked about with the listening to your podcast and the audio picking back up again if you get a phone call. You have to think through, how is this being used and what do we do to support that. With the automation coming into play, that's the same thing.

The rules and guidelines are still being established, but in this case, I think, a lot of it's going to be, what are those use cases and what do those users need, and then designing them specifically.

John: Yeah, vignettes, stories, use cases, and every time I'm thinking about this, I think there's this iteration's going to constantly ... And so, what you have, you have iterations and changes, you have humans interacting with autonomous systems. It gets to be very complex. The system itself has to be easy to use in order to interact with these autonomous systems, I would think.

Michal-Anne: I think what these systems are doing is complex, and I think one of the things that is now going to be an advantage by having autonomy and letting the computers do what they're best at, we're going to be able to give our airmen or operators the tools to do other things. So I think what's going to happen is that the focus that the human is going to have is going to be different than it is now. I think, too, that as these systems are evolving, they're going to become, I'd say, easier to use. The types of information are going to be ones that are going to be more meaningful, in some ways, because you don't have people spending their time monitoring. You're going to have them spend time actually doing things.

John: I got a question for you about real cool stuff. The real cool stuff is virtual reality and augmented reality. Boy, that's cool stuff to talk about.

Does cool stuff have anything to do with this user experience design?

Michal-Anne: Oh yeah, absolutely. I'm really excited about what's coming up with the cool stuff. Virtual reality and augmented reality, I think they're going to be playing a big role in the near term with UX design. The other thing that's interesting is, I would say, the artificial intelligence, and combining that with augmented reality. Now what you've got are situations where you've got new types of information, but now you've also got a new way of presenting it, so it's sort of a double whammy. If you're able to create context in a third dimension for a user and do it in a way that's really easy to interact with, I think that you're going to start seeing a lot of very powerful and very cool software interfaces created.

I think one of the other things that people aren't taking into consideration, but it's going to be a really neat transition, is audio feedback and tactile feedback. So it's not just going to be what you're seeing and what's in front of you and maybe even to click with a mouse or maybe even with one of those gloves, 3-D gloves in your hand, but it's going to be what kind of tactile feedback and audio feedback you get, and what you can do with that.

John: So the hot button could be a hot button?

Michal-Anne: Yeah, I had to think about that one.

John: I'm just going to ask you one forward looking question here and then we can end this. So where do you see this heading in the next few years? What kind of trends do you think and what do you think's going to really advance the state of the art for space systems?

Michal-Anne: Well, the biggest trend is that people are recognizing the important of UX design. That's finally being recognized as a critical part of these systems. I think the next big trend beyond that, because of this recognition, is design ops.

DevOps, development ops, is something that a lot of organizations are starting to embrace. But design ops, I think is coming next, in that it's going to have equal importance and run right in parallel with DevOps. So people incorporating design as part of their DNA, applying user experience design processes, like design thinking, that's, I think, the next big trend. It's really exciting.

John: Wow, design thinking. I guess experience is everything in your world, isn't it?

Michal-Anne: Yes, it is.

John: Well, great. Well, Michal-Anne, unfortunately, we are running out of time. I'd like to thank our guest, Michal-Anne Rogondino, CEO and founder of Rocket Communications. Thanks Michal-Anne.

Michal-Anne: Thank you, John.