MapCamp 2021 - The Health of a Nation

Okay. We're just going to give people a few minutes to join, uh, this session. Um, there, the obviously been in the waiting room, waiting for this to start. We normally get their own 70 something. Um, but yeah, people trickle in, so hi everyone. I'm Jen Ashley, and I'm wanted to go chairs for math come and they'd been questioning for last five years has been, it's been fun with the vendors.

Um, Uh, in this session, we're going to have three speakers, uh, and, uh, it's going to be one speaker after the other. And after that, we're going to have a Q and a with, uh, with all of them. So if you can type in your questions in the Q and a section of a zoom, or if you can access that, uh, depending on how you actually joined the, uh, the session, uh, you can type your questions in the chat window, uh, and will pick them up later on.

Um, so I'm not going to take too much time away from our great speakers. And I'm going to hand over the floor through Mary, who is going to give the first door. Thanks, Jen. I'm going to go ahead and share my stream.

And then, so I'm very students, um, and I work at the university. I'm uh, the group that we're talking, we're talking about health of the nation. Um, a little bit about me. I, my, my primary background is in networking infrastructure. I've worked at the university for over 24 years, um, and the standard disclaimer.

Um, these are my views. They're not the university of Illinois views. They're my remembrances and my involvement in different projects. Um, my background is, uh, networking. Um, I, I was over our infrastructure team, which does everything from deploying switches and writers to the cable, to security cameras, to virtualization.

And a few years ago, I decided I like strategy a lot more than operations. And so I moved over into an architect position, so I could be more involved with strategy and doing those sorts of things. My undergraduate degree is in physics and I have an MBA. I am not health expert, but, um, in 2015 universities started a new medical school and I was involved on the technical team of making sure.

The technical part of the start of the medical school was up to up-to-date. And then also I was involved in university's response to technical areas. And before I get too far along, I wanted to say, thanks to Ben at higher thought. Um, I've relied a lot on his tutorials, his videos, his templates, which you might recognize, and some of the things that we share later.

Um, so thank you, Ben, for all your help with, uh, my, my journey on learning worldly, nothing. So when I was asked to be part of this group, I was like, why are they asking me to talk about health? And I realized there there's lots of dimensions to health. There's the sort of normal, physical medical term of health.

There's also mental health, there's social health, there's educational health, um, and economic health. And they're all sort of inter interrelated. And as I talk about it within the university context, maybe some of that will become a little bit richer as we go on. So a little bit about the university. Uh, the university was founded in 1867 as a land grant institution, which for folks who aren't from the U S uh, land, we're going to institutions we're universities that, uh, the federal government gave states lands that they could sell to raise money, to form universities for the betterment of society.

Uh, the primary focus of those institutions was supposed to be on things like military science, agriculture, engineering, uh, they didn't ignore liberal arts, but it was to bring education to the masses and to help the nation mature and provide education to more and move technology forward. There is implied in the land grant mission involvement with the community and the betterment of the state.

Um, and so part of the DNA of art organization is also community involvement and, and doing things that help move the state. Uh, we're our one institution, which has to deal with the amount of grants that we get and the sort of research that we do. We're, we're large, we've got over 50,000 students. The university has about 1800 acres of land.

Um, and for folks who haven't been involved in higher ed, very much, one of the important things to understand about it as we go through, when we talk about our response to COVID and health on campus, is that the DNA of the university is that change is going to happen slowly with careful deliberation.

And the community is always going to want to be involved. There are committees about everything it seems like. And so when you're in a rapidly evolving situation, that can, that can be problematic, right? And so. In our COVID response, we were actually going against very deep seated patterns in our organization.

The other thing that's important about universities is that we like to build things ourselves. And if you go into any meeting in a university, you're probably going to walk into a room where people think that they're the smartest people in the room. And so you have to understand that when you're dealing with things, um, it's located in Champaign-Urbana Illinois.

It's a community of about 225,000 people. Not too big, not too small, but obviously the university has a huge impact on the economic health of the, of the area. We're about two and a half hours from Chicago. And Indianapolis is about three hours to St. Louis. So we have a lot of interaction with larger metropolitan areas.

So before COVID, if you would have said health at the university, it would almost always be followed by the word and welfare. This things are intertwined. Um, maybe because our population is predominantly young. And so we don't have a majority of our population that normally is struggling with health issues.

So we would talk about things like safety insecurity when it comes to, uh, security cameras, door locks, night rides, uh, safe walks, you know, the general safety of the population. Uh, we have a student health service and have had for a very long time. There are also mental health counseling services. There is quite a bit of information and also provided to students around drug and alcohol education awareness.

As you can imagine, uh, students leaving home for the first time as a residential institution, um, dealing with, with societal pressures. Um, and then we started the new med school, which of course elevated health conversations at the, at the university early on. So before Matt, the assumption of the university has been in person instruction.

Um, all of our, all of our pathways, the things that we did, weren't focused around people coming to classrooms and obtaining instruction from TAs, from professors or other things. Um, it was the rare class that students would receive instruction online. We did have a little bit of that going on, but it was certainly not the norm.

And the expectation is that people would come to the university, be in residence in Champaign-Urbana and be in a room to receive their instruction. Um, and so all of my maps too, I wanted to mention, as I'm taking, as my anchor, the student, as the anchor and their, their desire to stay safe while getting an education.

Um, and so. And the, in the area of being healthy on campus would be our student health services. We have very robust recreational facilities where you can play basketball and lift weights, do cardio, all those sorts of things. And then of course there were the education components around that, um, being safe on campus, being healthy on campus.

As I mentioned before, kind of the safety side of it, emergency phones night, walk rides, uh, security cameras, social experiences, uh, while the university has some engineered social experiences, those are very much self, self driven by students. And so they're sort of over on that left-hand side, our learning experiences very much relied on campus infrastructure, whether it's buildings, whether it was technology in rooms or whether it's our underlying infrastructure.

So before COVID campus infrastructure was vital to the learning experience. Um, and so then when COVID hit and. In the beginning, everybody thought of COVID as a bolt from the blue. Um, but I, I would argue that the university had done some planning ahead of COVID. Um, it was probably 10 or 12 years before there was the big scare about bird flu.

And so there had been exercises around bird flu. We had done some work around, um, incident response to where many of the leadership in the university had gone through incident response training as well. COVID itself was unexpected. The university had actually laid some good foundation for this sort of an event to where it wasn't.

We had not thought about it at all. We did have some ideas. However, one of the things, um, COVID really was this Mack truck that hit the university. And the fact that our assumption was that we would always do instruction in person. The other assumption of the university is that the university never closes because we have things that go on, whether students are in residence or not.

We have research experiments that still need care and feeding. Every day we have over 350 buildings with power and heat and all of those other things. So we still have to have people on campus, whether students are here or not. And prior to COVID, the university had only not had in-person instruction three times that I can find in 1979 and 2007 and 2017.

Um, other than that classes, you, you bundled up where in central Illinois, we get a lot of snow and ice in the winter and very cold winds, but you bundle up and you go to class. That is the assumption. Um, so when COVID hit, it was the sort of immediate public health crisis that the university had to respond to.

Fortunately, in north America, it was hitting at about the same time as spring. And so the response from the university was when, when students went home at spring break, they were going to go home and then stay home to finish out the semester. We have a lot of international students and so they couldn't necessarily go home.

Um, so we still had some students that were living on campus, uh, but they were not going to receive instruction on campus. They would stay in whatever their living arrangement was and receive instruction via the same distance learning as the folks who went back to their home in Chicago or other states.

Um, I think of our spraying response to COVID is very much a tourniquet. It was getting through the remainder of the semester providing as high, a quality education as possible, but obviously it was not going to be the same high quality that we had had in the previous fall and the same sort of in-person learning experiences that we had.

And so the sort of. Of when COVID hit is almost everything shifted to the left or learning experiences very much went back to handcrafted things. And you might think, why did they go to handcrafted? Well, remember our instructors were trained to stand up in front of classes and lecture. And so they didn't really leverage online teaching facilities very much.

We had a few who did, but most of it was, was the assumption that I was going to stand up in front of that. And so they very quickly had to come up to speed on how do you use zoom to teach a class, or how do you use our learning management system to deliver, deliver course content that you weren't delivering before?

Um, so it became remote instruction. How do you interact with students? You know, could students before we'd wait for the instructor to get done and walk up at the end of the class and ask questions. So how do you, how do you do those student interactions? How do you handcraft them? To some extent, you know, there was help there.

Professors helping professors. And there was the organization helping professors, but there was a lot of handcrafting or trying to figure out how do you do this on your own, uh, test taking was a really big thing of how do you administer tasks when, before you got everybody in a huge lecture hall and handed out tests and proctored it, how do you practice online class?

Um, and before we were relying on campus infrastructure, now we're relying on everyone's home infrastructure and possibly equipment they had at home. Not every professor had a machine with, with a camera, for instance, or he Mike. And so we did a lot of scrambling as did everybody else of getting cameras in Mike's, into people's hands.

And so really, like I said, it was a tourniquet, it was getting things there. We understood it. Wasn't going to be great, but we were doing the best we can to get through the semester. And there was a whole lot of everybody making it up as they went along, um, our fall response, uh, Was the university wanted to reopen and to return to in-person instruction.

We knew that logistics and process were going to be huge. However, as an organization, we are highly decentralized. And so the partnership and cooperation that was going to be needed was going to be at an unprecedented level and was not necessarily a muscle we were really good at. And so it was something that we had to devote ourselves to and really foster.

And then there's also because of our land grant mission and just our relationship with, with the surrounding community, making sure that we were being equitable with the community. We didn't want to bring a lot of people back into the community and put the community at risk. And at the same time, we didn't want to be isolated from the community, um, and have great testing where the, where the rest of the community had no access to.

So for the fall, we're trying to shift those learning experiences back to the right, to get them more into the product, the commodity sort of thing, not have them custom handcrafted by every professor, um, moving food and housing back to that better experience, that product retail experience. And actually you might argue that the food and housing might have actually gotten a little bit better and that there were things that students couldn't do before, like order food and have food delivered, uh, as opposed to going down to the cafeteria and eating at the big tables, things that students might have wanted before being able to order food and walk through a window and pick it up.

Um, things that, um, had been asked for before, but there wasn't a compelling reason to do social experiences were still, we had no idea what was going to happen with social experiences because we had the outside influences. Uh, the community regulations and laws and other things. And so what we were trying to engineer what social experiences would be, we probably knew they weren't going to be as good as before.

And there were also going to have to be limits that students placed on themselves as far as how they did gatherings. Um, but fundamental and underlying everything of getting the campus back open and safe was going to be our testing for COVID the university developed its own COVID saliva test. Um, and in part of developing a test like that, there's FDA approvals.

There's the actual facilities to process those tests. The goal was to have, uh, your test results in under 24 hours and for the university and students, to be able to use those tasks, to make decisions about whether they could or couldn't enter buildings. Uh, we already had started, um, a student app and so we accelerated that app development and we did what we call the boarding pass and what it simply displayed is when a student tests they could see the results.

From their test within the app, but they could also display the boarding pass that said whether they were allowed into, or not allowed into a building, which also, um, was it dependent upon how often you tested and those sorts of things. So the person monitoring the door at the building when you showed them the boarding pass, all they could see is whether you were allowed in or not allowed it, if you weren't allowed in, they didn't know what was it because you've got a negative COVID task or because you hadn't tested or whatever, they just saw the sort of ride grain go or no-go sort of thing.

Um, and because we knew learning was going to be hybrid, there were still many classes that were going to be remote instruction. And then some, we were trying to get in-person instruction. Home infrastructure was still in play as well as campus infrastructure. And we had a whole bunch of new freshmen coming in.

So we had to make sure because we have some students who are economically challenged, that they would have the appropriate technology in their hands to be able to take advantage of remote instruction. Um, And so before we go on to, I think the interesting thing is how do we, how do we think about how this even evolves further into the future?

I wanted to, just because of my background is I have an MBA and I have to exercise that every now and then kind of the health of the business. Um, every business needs that, ER, urgent care functionality that when there's a crisis, you can come up, you can assess the crisis, you can stabilize. And then haven't followed up by the appropriate group.

And I think there are some businesses that really like the adrenaline of always working. Like it's an emergency and COVID, you know, we've been running now for 18 months into some emergency state and you see a lot of people who are burned out, at least in our organization because we have been responding to it like an emergency.

And one of the things that are really like about mapping and about using business tools is thinking about the longterm care of a business on the long-term health of a business. Coming out of emergency mode and planning, providing for stability and operations, flexibility, planning, and budgeting and research and development.

And then, um, so I think, and what I hope we can talk about in our discussion is kind of the future of, of what does this health mean post COVID from a student standpoint, what, how do we move their learning experiences all the way to the right, their social experiences? What are the things that might be popping up on that right-hand side?

Because we all know that the expectations of students and parents increase over time. If I went to the, I went to college in the late eighties, early night, Uh, we had summit black walls and our dorms. We had giant shared showers. If you haven't been to a modern university, recently, the dorms are like nice hotel rooms.

Um, they're very, very nice. I'm very jealous of the kids who are staying in dorms now. And so those expectations of higher quality, higher service are all there. And so kind of what are those forces and how does the university anticipate those and react to them? So it's not an emergency, but we're sort of planning our future.

And so with that, I think I'm going to stop my share and send it over to mark.

Thank you, Mary. Um, so I'm going to share my screen now,

so thank you. Um, that was really interesting. So I I'm, I'm slightly taking a different tack on that. I'm a consultant neurologist could be. Um, but I kind of got a hobby and an interest in it and technology strategy, actually. There's quite a lot of parallels really between diagnosis management and decision-making clinical practice and, um, and strategy.

Um, so actually,

Gotcha. So, um, so I guess, you know, one way of looking at this is to think about me seeing you, uh, in my clinic. And, um, we've got to decide what we're going to do. And, and I guess actually we're always orientated towards actions. Isn't it? Point senior if I'm not going to do anything. Um, and ultimately that means making decisions.

Um, and so, um, actually it's about decision making and the information needed to make decisions that I think really interests me both in clinical practice and also for a strategy. Um, and I think there were a lot of parallels, so all of these maps are wrong. Um, but I, I guess I hope they might be useful.

I'm going to start out by talking about what we need, uh, At a kind of abstract decision-making level. And then I'm going to talk about what we have at the moment and existing projects and existing ways of thinking. And then I'll move on in the third, a little five minutes to what I think we need, we need to do actually.

Um, so I'm going to switch now to, um, well, that's not right.

So I'm using the visual studio code extension for awardee mapping, which is brilliant on tasks. We recommend it. So, um, so at the top here, we've got professionals and patients. And we've got to make a decision together. Actually it's a clinical decision and mostly what we're doing is reducing the uncertainty of that decision to make it more certain.

And most of that relies on diagnosis and we may have a possible or probable or definite diagnosis. So we're ready. We're starting to think about, you know, or maybe we'll. Yeah. January to a hypothesis and then perhaps try to prove our hypothesis. Um, so, uh, what, what, what do we need for diagnosis? Um, really seen?

So that number one is, um, pattern matching. And so this is a very well-established practice with taught at medical school. It's the kind of goal gold standard of, um, generations of, of doctors and health professionals. Who've been taught this and it's all the way over on the bite. We look at your symptoms.

We look at signs, we do some investigations. We use our clinical skills. We've had a lot of training over many years for that. And so that's pattern matching recognition. Um, isn't always about situational awareness and it is, and we've got to take into account things like Bayesian inference as well. So, you know, if you've got a high fever and we're in Africa may have a different diagnosis, if you will, in the United Kingdom,

Okay. We seem to have lost, uh, Martin there. Uh, I'm sure he is. He could never reconnect. So just give us a few minutes. We get him back. Um, Meanwhile, if there are questions maybe for Mary, you can type it in the chat window or the Q and a window.

I thought he was actually my connection that those are setting a problem. Okay. Write new questions at the moment.

Yeah, we were all wondering whether we it's our connection.

I mean, he did say he is calling from home rather than from work, um, today. So, uh, maybe there's just a problem with their home wifi or something showy. Um, okay. Um, Kenny, I'm not sure if maybe we should, uh, get started with your talk because we were not sure. When are you going to get mark back? Would you be okay with that?

No problem. Okay, great. All right. So let me get set up now.

Okay.

All right. Hopefully everyone can see my screen. Um, well, We're going to pivot here a little bit and, uh, thanks for joining this talk. Um, I'm Tiani and I'm going to be talking about the some work I did with a group of people, um, early in the lockdown on contact tracing and how. This group or people within this group and leading this effort, um, had to pivot and re respond to the environment.

So we're gonna talk about some of that. Um, it's, it's better just to get into it. Um, so I have 20 years in, um, engineering and technology, um, degree in electrical engineering with electrical specialty. So I did some civil mechanical studies as well, and that's kind of like evidenced in my career. I've worked in different domains where I've kind of used elements of.

Um, my background, as well as computer science. Um, I currently coach organizations in socio-technical change. So a lot of working with, uh, teams wanting to work in new ways, um, learning about, uh, DevOps and observability and metrics and how to change organizations and work in different ways. Um, I recently worked in Simon's, um, industrialization research effort, um, and I was in the healthcare group and I'm also clearly not a healthcare expert.

And I was in this group maybe because I. Or didn't know much. I did learn a lot actually over the year that we did this and also through this work that I did on this project. So, um, so early in March of 2020, um, we, this a startup founder that I worked with many years ago got, got people together and it was the citizen led effort.

Not for profit, let's find a solution to help stop the spread of COVID-19. So we can, um, we had some partnerships with MIT, safe paths, um, with the Mayo clinic, um, whomever we could find that we could partner with, um, that had, you know, knowledge in the space or had done some work in digital contact tracing type solutions.

And it was this effort to, okay, something's happening. People are getting sick, this thing's spreading and why don't we put our heads together and take, um, do what we can to, um, address this problem. Maybe naively. I don't know if it was naive. Maybe it was idealistically me had this idea of, um, people taking their personal responsibility and taking ownership and saying, yes, I want to help.

And I will report things on myself, um, for the greater good for the good of the community. And so we even came up with a roadmap, so around. Um, the notifications, making sure that they were robust and how do we make sure that self-reporting is authentic? So what if we were to gait, um, reporting of, uh, not just symptoms, but actual test results, and you could upload a photo photo, um, to a reviewer.

So maybe there's a contact tracer actually using the app. Um, making sure that the Google location history on iCloud and location history via web for confirm you just to submit the location, um, making sure that privacy concerns, um, place matching for late. Maybe if there are hot spots or something like that in, um, in a city where you could actually avoid actively avoiding it.

The idea was what if we could do something that kept people from having to be locked down forever, um, that they could move out and about and have, have, um, reliable information that allows them to do that. That was kind of the premise. This effort and we even had a, um, a cool little marketing video. It's pretty sure it's, I'll play that.

Hopefully you can hear the sound.

Okay. So you can see from the video that the premise was, I want to do my part to stop the spread of the virus. So I want to help others. And I want to let them have the information in case they came in contact with me. And then also this idea of can be extended so that you have informations that when you're out and about you're, you know, where to go, what to do and how to stay healthy.

Um, and so I tried to come up with a map in retrospect of what was actually happening. Um, so that was, you know, early to mid March. So the idea was for the general public having a need to stay healthy. And so I thought if I could decompose that at the time early on, it was, we had this idea and, and kind of like, um, we, we, we all say all the time, like the maps are wrong, so there could, the dependencies could flip or it could be different.

But the way I thought about it was okay, getting tested, letting others, friends and family know. If I've been in effect, uh, if I become infected, being able to quarantine or, you know, um, physically distance and watching for sentence seemed to be like the early on the things we kind of started to know about getting tested was the thing that was not, you couldn't just go around to your local pharmacy and get, get a test.

It was, that's why I kind of put that as a, um, like the, the, the dotted line into having reliable information in order to stay healthy, but it was pretty. It was becoming clear as time is going on, what it means to let people know what it means to isolate. And very soon we had information about what the symptoms were.

And so that's kind of the placement, um, from a map perspective, vaccination, I mean, there's like, what about vaccines? It was a big question, mark. It's this nebulous thing, way off and off to the side, like, what is it, what is it going to be? Will this ever happen? In in fact, early days, it's like at least a couple of years before there's something we can even test based on how vaccines are, um, uh, created.

Um, and so the idea was okay, if we can give everybody reliable information, then direct to the public, they can have the current trace app or contact tracers could be a middle person that depend on the app to provide reliable information that allows you to do things, behaviors that allow you to stay healthy.

The N the app was a GPS solution. Um, and we realized that a hybrid Bluetooth GPS solution would probably be more reliable. So that was one of the things we were looking into. And that was part of the basis of some of the partnerships. But initially it was like we have a GPS solution. Um, this group of people came together.

Th the slack channel blew up within a couple of weeks to. I don't know how many hundreds of people, hundreds, maybe even a thousand. Um, and we had a group of volunteer pro product engineers, um, mobile engineers and product people. And I was on the group of product. Um, people it's probably like seven or eight of us that were, um, doing discovery, talking to epidemiologists, like talking to researchers, um, writing user stories, working with the dev team, um, looking, uh, keeping our ear to the ground and seeing what, what news was coming out, what new reports, what data, what all this kind of stuff to help this effort.

Um, and so the one thing that was definitely a product close to a commodity that most, most people have is their mobile device. And so what we were able to do was get a beta application. It was not in the app store, but we had, you know, like a test flight, that kind of thing, and a marketing website and the marketing videos.

And we were able to get, um, started off with, because of this big group of people that came together, all these different people had different contacts. They'd reach out to them, they'd raise their hands. They'd let me in the slack channel. I want to work on it. Next thing you know, we had, um, uh, like 500 beta users just at Warby Parker, just in New York in Manhattan.

So you could actually get the app and, and drive around, walk around, do something and test it. I test it, you know, with, with your friends, um, the there's a dependency to getting it to the general public, obviously to get it into the app store. And that was something that was becoming challenging, but it wasn't really clear why we're meeting their requirements.

We're answering the questions as we go through the review process with all of the, um, via stipulations that they have. And, um, that's where things started as the weeks were going on, started where things kind of went sideways. So I'm going to show where things went sideways. So basically apple and Google collaborated together on API.

And they had strict guidelines for what, how you, how to get through approval into the store. And it was meant to be for government for states and healthcare institutions. So an independent. Um, co uh, you know, just, I guess, cohort or collaborative that we were of people that were just doing this out of Goodwill, because we wanted to try to find the solution solution, knowing that contact tracing is something that works.

We get exed out immediately because unless we have partnership with the state says Corona trace is the app for us. And it conforms to whatever, uh, um, requirements for the, through the app store. That's the only way it's going to get out to people. And so we ran into this hard blocker, so that was the tech infrastructure, the apple, Google API that popped up.

And what happened is that the regulations micro regulations at the state level. Influenced by this technology that was created. So not only did it make our application and all the work that we had done for however many months, that when this became clear, um, we had to pivot away from that. And so the, um, this group of individuals, um, particularly the founder, um, thought through, well, what could we do?

What, what are the needs, what are their, what, how, who has to, who is in a position to take, um, take control of. Um, their environment and in terms of tracking and making, giving information and helping people to be healthy well, we're all in a lockdown. And so what happened is there was a pivot to, um, seeing the shift between the employer and employee relationship.

So it's kind of similar to some of the things that Mary was describing in her talk in the university. So, and in a lot of workplaces, there was this emphasis on a fun place to work, how to attract and retain, um, employees, what it moved to. And what we see today is a lot about flexibility, it's healthy and safe.

Um, that kind of thing. Um, health and safety was more about those posters that you saw, like in a break room or depending on the type of environment you work, you worked in too. Um, now like bought top boardroom concerns. There's this element of disruption, employee health and safety there's liability. And there's like, how do we actually find a way to continue business in some cases so that people can so that we can continue the business so people can stay employed, all those kinds of things that, um, come into play.

And so what that pivoted to was a proposition called return, safe to return safe now has over 90,000 users and counting, and it's completely in the private sector. So they basically took, and I'm going to show a map of what this looks like. I'm very messy map, basically a platform for employees and a platform for call it human resources or whomever is making sure that people are safe, making sure that, you know, who's, who's at work, who's not, and that they have what they need, um, that they have the support that they need.

And so that was, um, pivoted into mobile and web app options. So there's not just this like mobile app. There's now a web app. There's also, um, um, visitor kiosk options, building access control, and I'll show her how this all connects from a technology perspective. There's also like, uh, entity logging there's, um, Bluetooth, uh, wearables.

The wearables can, even if everyone's wearing those badges and tags, you have. Live contact tracing going on in your, in your facility even. And then there's the commands they called the command center originally was called biosecurity portal. Hence the theme of my talk. So it was this idea of biosecurity being really important and having these kinds of, um, tools in place can help with any kind of health risk where you need to make sure people have the information to stay, to stay safe.

Um, and so there's vaccinating and vaccinations that is tracking vaccination card validation, um, tracking for exemptions that all being very new and very much driven by the federal mandates for vaccination and OSHA requirements, um, testing results, screening entry, passes for events, and then also case management.

So we have people who are at home. We have people who need to be cleared to come back in that kind of thing. Um, and so that's how that was pivoted. And, uh, like I just mentioned. The apple and goop. What we learned through the apple and Google API experience also was the lots of concerns. So people in the beginning were like, yes, I'll report whether I had, um, whether I have COVID or I got sick.

And as there's more news, more coverage, more questions, more articles about privacy, privacy, and safety and data, and, um, securing your identity. People started to like shy away a little bit. So one of the things that was really important was making sure that there is security data protection, data, privacy, that was like front of mind for the very beginning.

Um, and as well as like compliance for OSHA. And these are like the, actually the five step, the actual, like what, um, private in this private sector, what entities have choices, how to, how to implement this. Um, and so this is just a zoom in of the Bluetooth tags for peer-to-peer for clip-ons Bluetooth, triangulation, that's badges and lanyards.

And then the app has an actual log book. You can do manual that's with phones. It could be company provided phone as a computer, your personal phone. There's like all these different customizations that they were able to do. So how does this look from a mapping perspective? Um, the, everything around purple and it's very messy, very wrong dependency map is pretty much what was leveraged from the early days of the.

Contact tracing digital app. What we learned, uh, from a development perspective. And just from the fact of putting it out in the world, seeing how people used it, what things happened, what things to keep, keep in mind from a technology, from a usability, from a, uh, and then all the data privacy and, uh, all of those things that started to emerge.

Um, but those users now split into, and we have this idea it's still kind of general public, but through a lens of employees and customers, people who are attending events and then businesses and institutions, they want to stay or reopen, stay open or reopen, and people want to stay safe and they will also want to go to work.

And over time, we're seeing people want to get back to doing things they enjoy to do. Um, and so outside of that, what things kind of emerged was okay, managing and monitoring people's safety, building, access management. So as you can see the building access management, we can connect it to existing technology.

We have. There was technology that we had, that, that we had at our disposal through, um, partnerships and connections. We found that we're able to tap in immediately to existing building access. So we could now tie the contact, tracing the tagging whatever type of technology to building access, for example.

And then there's. As coming out of a need for monitoring and managing people's safety. There's this idea of like, well, we have developed additional health and safety protocols. That's a clear dependency there. And then that branch has ended well, there's vaccines now vaccines have become available and multiple vaccines become available and they're much more easy.

They're easy to get. Now, most people can get them and there's testing management. Um, and then there's also the CDC guidance. So those things are kind of feeding into the health and safety protocols. And then, but these are the things that have a lot of flux. That's why I put those with the dotted lines there.

OSHA requirements are coming in. Now, people are trying to figure this out. What are the, what does it mean to have the mandate? What does it mean to have exemptions? How do we track it? How do we show that we've complied? What kind of reporting is going to be required? Like those are the big questions. Um, and then as you can see here, like all of these things kind of connected in some way to the existing technologies, which then just had.

Uh, little elements added on which with the tags and the badges, the web app and the portal, which were kind of like easy pivots for this group that had, that knew how to do that already. Um, and so the idea was to go for the private, uh, private sector. And I think, um, that was like a really, it's been a really interesting experience to see this idea of how to respond to the environment real time.

And what's given this group particularly competitive advantages, the ability to do that, the ability to leverage existing technologies, the ability to, um, uh, find a system, to keep track of what are the latest regulations that, what is the latest information that we know, and then, and working through all these different companies, institutions, event centers, learning a lot about, um, what it takes to, uh, Um, manage these, these workplaces or these places of business or these in some cases, educational institutions as well, what kinds of custom workflows are needed?

Uh, what are the other kinds of technologies out there that are being used and how flexible do we need to be? Those are some of the things that they've had to grapple with as they go along. Um, so it's been pretty much a, a, a whirlwind and a wild ride and, and that's, uh, that's my talk, that's the from, and my last thing, and just to mention is that, which is kind of outstanding as, so this, the proposition from carotid trace, um, shut down around March.

And may is when they spun up with return safe. And between may to June, July, they had, they were getting sales and had this actually deployed between June ish to September of this year. So, um, last month it's in that short, that period that they got up to the 90,000 users and counting, um, as of right now.

And so with that, I think I'll turn it back to mark. Thank you very much. Thank you. I'm so sorry that my system failed. Uh, hopefully it went again, um, been online all day and it's been fine. So hang on that bite. Um, can everyone see my screen now? Is that. Excellent. So I think we were talking about situational awareness dot clinical diagnosis, actually.

So, um, I was talking about the importance of, um, probability actually, um, as well as pattern recognition. So, um, um, but, but then I wanted to talk about feedback actually, because feedback leads for us really important as well. So the faster, the feedback, the faster we iterate, the more we learn and the safer we are.

Um, and that's not that dissimilar to the kind of strategies that you need and things like DevOps, um, say, you know, the quicker I get a result from a patient the better actually. Um, but it's not just about that, is it? So it's about feedback. So, um, if I just, um, uh, move to the next, um, Uh, we moved the next part of them that, which might have feedback for individual patients, but also for talking about feedback for cohorts of patients that might be attending a single facility or shared characteristics and a particular diagnosis or particular treatment to a particular intervention.

There's also a third, which is about advancing knowledge. So we may not genuinely know what to do in this clinical situation. So, you know, there's trials, clinical trials. So we need fast feedback and the faster that we learn, the better our health service shortly. Um, and so, you know, over on the right there, we've got the kind of factory model of health where, you know, just do the same as we've always done.

And it's been taught for 50 years. Um, and over on the left, we start to build a learning health system. And I think we're only at the beginning of that. So feedback needs continuous learning. So it was really interesting to use mapping to start to think about the aspects that may support a continuous learning system.

And one of those is continuity and we neglect that at our peril. Um, we know that continuity in health provision is really important for outcomes actually, and many technology. And. Lessons continuity. If you've got some kind of call center model where you can speak to a health professional, but you never speak to the same health professional, um, uh, and there's no data shared between them.

You're lost actually. Um, that model of care is, is not good for people over their lifetime. So continuity relies on teams, but it also relies on data to share really important aspect of this map is the focus on outcomes. And I don't think anybody does this very well. It can be patchy. Every time we start focusing on outcomes, it feels like we're breaking new ground.

It's not systematized at all. It relies on data sharing because surely we need to share data across facilities to understand outcomes, mostly to make sense of outcomes. So we've got some work in multiple sclerosis, for example, so we can plot your individual progress over time. How'd you, how'd you make that useful and meaningful.

It's only when you plot back against all of the patients with similar other characteristics that you start to really be able to make decisions and reducing uncertainty about decisions. We do not have decent tools to support clinical decision-making, but stop it. Absolutely not. So we've got to make sense of data in the context and the context is really important and a lot of tools are needed to understand the context.

Um, and all of this I think is supported by. Latest standards. We're getting there with data standards. So in, in the U S now, just today, the H S H S H H S has just agreed that they're going to be using fire mandate, that you'll be able to exchange data. But I think a lot of that is good. It's not a bad thing to do, but we're just on the cusp of this and we need to be raising our game.

Uh, And implementation of data standards is left as an exercise for the reader. Um, so we do not have readily available easy accessible tools. So if you are new startup, it's really hard to get started, actually. Um, and so the implementation is all the way over on the left and in most health care facilities as well, but it's changing.

We still got our own data centers. So you've got people whose real job is to look off to patients and what are we doing? We're building data centers. Um, and, and that can't can't make sense at all. So I think the map tells us about where we are now and where we need to be going. We need to be building tools to focus on outcomes.

We need to be making tools that may help us make sense of stuff, and we need to be moving implementation and our data storage and pipelining and our compute way over to the vitamin side. Um, so if I go this way, So that's that. So that's, that's that slide action. Um, and, um, so I think mapping tells us where we need to be focusing.

So it's this bottom left-hand corner here. There should be easy wins, uh, yeah. Implementation store and making sense. So where we are orientating towards action. So what do we need to do when we need to focus on outcomes? Number two, we need to fix on data, sharing how to do that safely and distributed, uh, but with some consent and control, because otherwise we lose people's trust.

How do we make sense of data? We need to support shared sense making not just by us, but by the patient. Um, we need to be focusing on implementation. So that means not custom building it. Every time we need to do it, we need to share tools, libraries, services, and we need to, um, build out our data stores and just use commodity providers.

And actually, when you start thinking about clinical decision making, you also start thinking about machine learning and algorithms. So that's the kind of hot topic at the moment. And then machine learning, how exciting we'll get this computer to diagnose x-rays and CT scans, et cetera. And we definitely haven't industrialized this, right.

It's really at the advent, uh, we can't even buy it as a product really. So we're, we're going to have on the left-hand side, we are again, breaking new ground and I'll tell you that the things that algorithms need in terms of information, monitoring and evaluation are exactly the same as clinical services are always needed, but we've never had it.

And I see this as a point of synergy, so stuff that algorithms need other same things that we need. So there's a foundation that we need to provide. I haven't got time to go into all of this, but there is a blog post for me about this from a couple of years ago, but here we've got the professional and the patient wanting to use algorithmic decision support.

Obviously we need expertise in machine learning and training. That's not the focus of this map. My focus is on. Can meaningful data monitoring, continuous monitoring, monitoring of the decisions made by algorithms. So it all becomes data driven and a focus on routinely aggregated into operable records, founded on open standards and readily available open source tools.

That's what we need and we haven't got it. That's what we need. And we need to be focusing again on the left-hand corner of art more so for AI, we need outcomes when you fast feedback mechanisms to support continuum, routine evaluation, but like folks and post-marketing surveillance when he's been monitoring stuff.

But you can monitor me as well, you know, as a clinician and monitor, um, a service, an individual or AI. Most again, uh, the implementation should not be custom built. We should not be distinguishing between electronic health records based on standards use. It's not trying to distinguish between Firefox and Chrome because they use a different page.

TTP. Does that make any sense? It should all be standardized, but at the foundation of it, then we should be pushing our system suppliers way at the higher value chain. So that means do much more sophisticated things with healthcare data and supporting decision-making not wanting stuff in the weeds. So machines don't need again, some different to me.

So what have I got already? Can we sense check what we're doing? So I'm just going to switch maps here. Uh, so here's the current state. So, um, it's focused on organization. That's a really important observation. So the organization is not necessarily the user, um, on the use of actually in the patients, they use it, but, uh, we work with organizations and the organization dictates what we get, um, and that comes with to spend a whole session just on that.

So imagine an organization, a health care facility has bought an electronic health record. They've also bought a patient portal. Well, other than, um, so the patient portal actually is not independent, right? It's dependent on the EHR, which, so if Dale owed almost in all circumstances, so we bought these from the same thing that, um, now our health care facility, um, we're starting to talk about the needs of the facility.

The user is not the customer here. We aren't holding a purse strings. So, um, this organization wants to do some population analytics. Um, and so, um, we go off to the same vendor that provides our EHR. We'll start to feel a bit the wrong way around here. So our population health analytics is built upon the electronic health record.

We might use some commodity data and analytics tools. That's fine, but we're in this product sphere here and we have to take out our paycheck to pay for all of this. And then, um, we realized that a lot of our patients attend both our health care facility and an another healthcare facility. So we want to set up a health information exchange.

So that's by it. And that's what people do. They buy a health information exchange that is dependent on the EHR. You can do this now with the big two main products that are available. Um, and then you realize actually none of this does what we actually want, which is a bit of an issue. So we start to have that build out our enhanced developments and we're doing some custom work, but we have to buy in the API product.

So that's old as well. Isn't it? Because the API is dependent on the APHL surely the EHR should be dependent on the API where we're all back to front here. So we bought this off the shelf EHR, and we've got to do a lot. A lot of customization is always a red flag and that's dependent on the API. Goodness.

So we want to take part in this church. So, um, that's an interesting one. Um, so, uh, what facilities do we have for this. Normally quite separate. So I've got a ton of different research, registries, registries, breast implant, registries, all kinds of different things. You have to log into those. So flush to work, we would have teams of people who enter data in a separate system to track outcomes in strength for search.

It's a bit odd because it's not embedded in the Dumpty dump in the day-to-day of your clinical care is all the way over here, and we're doing it differently for every single research project, which is really weird. So, uh, you might have a patient with multiple comorbidities, and yet they're registered on three different research registrants.

It's not embedded in the day-to-day clinical practice. Very strange. Um, and of course, actually, when we bought UPR. We had to do a ton of customization to start with. So when you go to healthcare for sentences, you find out that they, um, that actually hire more developers because it needed integration with all their other kit and it needed at a ton of customization for suiting, local workflow and process.

So workflow process ends up down, over here on the left. It's interesting. Um, and all this integration work is all custom built. Cause it's really hard because there's not a lot of standards involved. And then of course, some of our capabilities are dependent on standards and that means collaboration and send some cultural stuff here and we need standards bodies.

And then of course, all this kit needs data centers. Um, so, um, that's fine. But most of the legacy stuff is still in hospitals, sitting on an old fashioned server somewhere. Um, some of the modern stuff actually to be fair, most of the modern EPRs are running on cloud cloud providers. Um, so you've got this kind of mixed picture.

It's not ideal is it, there's no platform here. Although the EHR vendors will tell you they have a platform, um, they are the platform for their own products mainly. And, um, and that, and that's an issue. Um, and I'm not sure a thin wrapper of API is going to do a trick for us. So obviously when you say, uh, and look at evolving some of this, we need to be looking at pushing out API APIs, uh, to becoming a commodity and building stuff on those rather than them being on everything else.

I mean, if you're moving stuff to, um, um, to the right, there's an interesting thing here that emergent practices, uh, kind of missing. So if we have something new and innovative, we're locked in here, we have to build on this. Um, and I think that's a real problem for us. Um, and it's only when you step back and put all of this in context that you start to understand that.

So, um, so that's the sense check of where we are now? Um, I don't think it's very good and I think we need to do a lot more and I really did usually hate that the big tech giants would have come in by now and sorted this all out. Um, like white Knights, but actually I've been really disappointed D minus in my book.

They've really focused on data services and cheat. Okay. That's good. I suppose. But, um, cloud, um, time is more than just moving the data center. Isn't it? It's not just that there's, there's more stuff here in terms of what we could do in health and care, and then not grabbing hold of the opportunities, apple, to be fair.

Actually, at least they're visible to the end users because they've got things like apple health. So they're making clinical data visible on your mobile phone, but it's, it's, it's not transformation in a way that I think that we should be expecting. Um, this is what you get from existing EPR vendors. So you kind of get this thing here.

Um, you could buy all of that, I suppose, from a single vendor, occasionally people do something called best of breed, where you buy the different bits of this. Um, and then the final problem that I want to point out is that we've got this artificial separation between the search work about our day-to-day and our analytics, and they often have separate funding, separate managerial streams, separate leadership, um, and actually you can separate tools.

Like we use different software languages and services and libraries, and yet we're dealing with data, data. We're dealing with really strange that we've ended up in the same state and stepping back and understanding that all we're talking about here is different levels of granularity and that model of consent and that all it's all actually the same.

So you can look at what an EHR needs. Um, so, um, what does an EHR need? Well, you could decompose the year, Charlie bins, different modules. Um, I don't like looking at it like this, but it's more way of looking at it. Um, the HR needs billing and billing needs, ordering, understanding what we've ordered. It needs clinical data and it needs identity services to know who to bill.

Um, and I think EHR design tells you that it's all being coming from that I'm afraid it's not focused on outcomes. It's not focused on transforming the health of a population. Um, maybe that's unfair, but I think, I think this is the case, actually, this a novel stuff about workflow, but it's really immature.

Um, all of this is then dependent on some core, more simple building blocks, actually, which you can buy from other places. So if you're doing the best of breed, you can bind documents and results and radiology. And luckily there's some standards work here. So that actually, they probably aren't interchangeable.

And that's the model for the future, but this stuff needs to be moving to the right. And all of this is. Based upon a foundation of reference data and terminology and making sense of data, which you don't really have at the moment. Um, um, but, but should be over here. And some of it is already over here on the vine spool video commodity.

So this is, you're buying them on the list. I've just bought all that. I've got stack identity from a windows domain controller. Then I supplement it with some data, but I've brought this in it's a multi-billion pound thing for health facility, and maybe I tack on some easy integrations and I'm stuck with.

Um, and that's, is that a good model? Well, that's, that's the question you can do best of breed. So I bought a different document repository, the poetry, and being diligent, sticking this together, using standards. It's okay. It's not a platform though. Even that really close, um, closely knit tight end to end integrations with difficult to decouple at fossilizing and making things with difficult to change.

So, um, so just to finish it here, I wanted to start really from beginning with the user needs. And I don't want to start with that one. So where I want to go is this one and just to finish off, um, this is where we have true needs. So I think it's all about decision making. Um, and I think that we have evidence, um, so we need to support our, our decision-making with the very best evidence data needs to take action.

And we need mechanisms to do that in terms of process and workflow. And we need to communicate that. So I haven't I've left out communication on this cause it gets too complicated. Um, so, um, so we might be asking a question. Can we address inequality in a population? Is this treatment safe? Does this intervention improve our patient outcomes?

Can we, should we use this high risk treatment in this patient? When should this patient seen, can this patient send sent home? What is the trim? Doesn't actually matter what the decision is. These are these, um, but these are, these are good examples. Um, and so what we're talking about here is decision support.

Aren't where you need evidence to the juice, the uncertainty of, and decision-making, we do not have good work here in decision support. We do have some meaningful data it's patchy, but you can kind of buy it off the shelf products to support you collecting that. But again, we haven't focused on outcomes.

Um, so, um, meaningful data is dependent on the right information at the right time. Um, and it needs to be universally accessible, um, which used to be a straight line. Um, so I think all of these things are dependent from distributed data. Um, so if you're going to be measuring outcomes in any systematic fashion, we need to be having ways of collecting data from across the art ecosystem and bringing it together and making sense of it.

And that requires some kind of cultural things and principles, standards like trust and openness and transparency. Um, you know, these are good practices that we should be incorporating within our ecosystem. Um, and then when we take action, we need workflow solutions. So we need to orchestrate stuff across multiple organizations.

We can't do that. It really becomes organizational centric. So if I have a patient and I need them to have this and that and this and that on he's orchestrating, and this is something that's really. Under developed at the moment in the healthcare system, there's little flexibility and agility and adaptability.

We don't use low-code no-code environments. We don't use rules, engines, and all of these things are potentially really good things in health and care to make sense of data and that use of data. A lot of this becomes declarative. Um, we put a problem. How do you safely distribute data? And I think that some of the talks, um, all today, and I'm doing a session have been about how can you make things safe, really?

How do you distribute data and put a wrap of confidentiality so that we know we're allowed to do what we're going to do with that data. We're not allowed to do that without data. So I think a lot of what we need in health and care is about distributed data resource, location, and finally grained authentication.

We don't really have that. So if I'm working for health facility, I normally access to everything in that healthcare facility. Um, we can't use that for the modern. Then what is a huge amount of work that we need to look at in terms of distributed communication and distributed orchestration across systems.

And that requires distributed control and the much greater use of privacy enhancing technology. Things like secure in place for safe data processing, differential, privacy, and techniques. So I can send data to governments, but I know that they can't be, identify that patient while I make the identification be difficult.

There's even things like homomorphic encryption, which are coming on every year and they become practically useful in the next time, um, so that we can actually send data and process it and keep the mains increases. And of course, to support all of that. Um, um, there's some foundational platform services, which I think we must be pushed over to commodity services.

So knowledge base is reference data terminology, the data store, how data is centered around the points. This issue should be all the basics. And yet most of the time in health and it, this is what people are focusing on. So I think the Wardley map here, I hope it's useful. I think it shows up the problems of our existence systems of where we can act.

Um, so I've just got two more things here. So there's the slide. And I think that it divides it into three then. So we've got a platform that runs along here. Um, and I think that platform at that moment could be focused on data and data standards, um, and they can, um, open source software line is that makes sense of data, um, readily available.

Um, and then I think that we need to be looking at lightweight user centered, um, really composable tools that we can stitch together to solve user problems, which can all be different. I'm not talking about building MapR and building tools to build an NPR. And then I think that we need to recognize these novel ambitious, disruptive technologies that could absolutely transform the platforms of the future so that we can share data sanctuary.

Uh, I think that's the plan. I think that should be our plan. We need to focus on outcomes, meeting, measure value and performance of health systems. And we need to make the use of data just completely ubiquitous and to create learning health and care systems. We need to look at health data sharing so that we're using privacy enhancing technologies more and more.

How do we inculcate that? How do we make that a commodity? So it's just like, you know, I don't think now about HTTPS. We should be doing this for health and care. And how do we build systems that inculcate trust? So need foundation of people, professionals, and patients understanding that we've got systems in play that support clinical practice, that recognize practice when it's being wrong and allows us to take action.

And most of the implementation of the core things need to be shifted to the right. We need much more use of open source data. We need to create two-sided platforms really. And, um, um, and that should just be absolutely creating the foundation for totally new models and markets for health and care, um, applications that, that are much more sophisticated than we're talking about now.

Um, so I'll, I'll end it there. Thank you very much.

Any questions. Thank you for that, mark. Uh, so thanks Mary Jani and mark for, you know, screen docks. Um, so yes, we're actually open to the questions now, um, either from, uh, any of the panelists or the audience. Um, so who wants to, who wants to go for us? I don't see any questions in the chat or the Q and a window.

So I'll start with one from mark. Cause I think it's really interesting. Um, we're, we're struggling with a lot of these same questions around data, um, who owns my data as a person. Um, how can I expose my data to make bigger decisions? So at the university, of course, with COVID we were talking about health data, but there's also the idea of student success.

So how can you predict when a student could be in trouble and provide early intervention? So their educational health in this case, right. And that ability to leverage things like secure enclaves and those sorts of things. So I think there's that taking a step back of there's many industries where people would be willing to share their data if they were sure it was.

And that maybe as a whole, we could make better decisions about it. And so I'm hoping, you know, those data standards that are for health care that we think about them as wider data standards. And I don't know if you've talked with folks outside, but I know that we're struggling with the very same questions.

I think that's right. And listening to talks all food today, that is the commonalities that people experience and that mapping kind of choosy you step back and go back to the there's a, there's a core set of capabilities that are the needs of the things that you want to do, which are completely different than the needs that I want to do, but their shared capabilities.

And it's really interesting bringing people of different disciplines and domains together because actually until you start doing. You don't realize the commonalities, my, my worry with all of this is who funds all of that, because actually that to me, um, is probably a five-year project. Some of the technologies there are really interesting and are absolutely critical for where we should be going, but who's gonna, who's going to develop and pay for those kinds of things.

I think the first mover will get an advantage there because actually if you can provide secure and safe ways of doing trusted computing and analysis, you get a huge advantage for the future. Um, so I think the mapping shows us that. I think. So the other thing that in looking at your maps, um, I thought many of the things too, when I think about maps is that as things grow organically, like you think about an EHR starting with some very basic components and it's like, well, we could add on this, like you out of that, how messy things are.

And. How over time do we evolve and maybe simplify that messiness and make it better. Right. And, and, and in it, we talk about it as brownfield versus Greenfield, and sometimes it's just, you burned down, what's there and you turn, let me start over. But with an EHR that seems almost impossible. Yeah. I think you're right.

Um, and some of that will be then liberating data from an organization and depending on your ecosystems. So if you will, in a state funded model of health care, this should be easier. Should, should be. I'm not sure what it is, but it should be. Um, and I'm really interested in the commons and you know, how actually, as a system, we make better use of data.

Um, but until we get trust and there's those core kind of principles in the middle sort of shared, right. I don't know how, how, how would solve that?

Thank you for that, mark. And thanks for the question. Uh, Mary, uh, so this question here from Angela, let me just read, get this culture show up as pivotal between custom built and commodity on most snaps.

Anyone can answer that or respond to that question if you want. Do. I think you're probably referencing me that I got those as good practices in the middle. It wasn't really deliberate. It just came out as that. Um, often actually I think pop culture is kind of a cool dependent, you know, we need to depend on lots of different cultural factors to, to deliver what we need.

Um, it just so happened in what was right. Slap bang in the middle. And I think it's good practice, but I'm not sure, um, that, that the, um, some of the cultural aspects that I've been talking about, or really over on the right-hand side, where they should be, um, um, these should be absolutely kind of bread and butter to, um, our systems, but they're not, um, they're just really good practices that the best are using.

Um, and so that's where they ended up. Um, I don't know whether that's the case in all that, so I'm sorry. I don't know why this question reminds me of something that Mary explained when we were doing our, one of our teammates sessions before about why the university, her university decided to build and come up with their own solutions versus, um, buying something off the shelf and some of the unique either culture or just the, uh, the, the culture, the mindset to problem solving.

That was something that remained. I keep remembering. Um, and I don't know if that plays, it's part of this question too. That was something that was really interesting. Um, interesting popped back into my brain from time to time from that conversation yet. Yes. Cause maybe you did say, you know, you seem to be as an organization able to respond really well.

Uh, and very rapidly. And you managed to, you managed to actually like, you know, get your, your systems up and running and then even the help other organizations, didn't you? Yes. Yeah. So, I mean, we did develop this saliva test and we set up the testing centers and we were able to leverage existing. So we have a veterinary medical school.

And so they were able to take lack of capacity and leverage that, um, looking from the outside and even from the inside our culture, probably if you would have said to me, five years ago, it would be, there's no way we could have built the response we did, but there's also a culture of community that said.

We have this driving thing we want to open in the fall. And so we put all of our effort towards that and we laid down all the alliances and grievances probably is more of laying down old grievances and coming together. And so I think there's the culture that we saw on the outside, which was this siloed individual, very decentralized thing.

But then there was a greater overarching culture of, we are one and we succeed or we fail together. Um, and so I don't know where culture shows up in the map because I think it might depend on the map. Right. I think cultures tend to be very custom to an organization. Um, and so the customer, I would almost always put culture as a custom art, um, and it's handcrafted and I don't know how immutable it is or how changeable it is over time.

I think it's very hard to change culture. Um, you know, for me, this was inter it's an interesting one because the. Proposition for, um, contact tracing for all. Was it very community, very much role in this together very much. And it was people from Europe in Germany and, and, um, you know, Asia and Canada and all over the United States, literally on their free time at, you know, at nights getting together to build this thing.

And, but there was, so that was, that was like one the negative that was culture. But then you could say of culture is kind of an output like of what you do. The, the overarching, I guess I would say, I would say there would be a theme of people that had up in software technology and that informed, literal a lot of, um, whether we custom built something versus.

You know, found something that is out, that we can integrate, you know, use an integrate and leverage for a solution to make, to get things out there quickly. That was something that I noticed, which is definitely between custom built and commodity. I don't know if that, um, but then there were other things I think that, um, came into play that it probably might not be on the map, like, um, things where you're trying to respond to change so quickly.

You're making intentional trade-offs that might result in tech debt, things like that. Um, I don't know if that's a cultural question as much as, um, You know what the organization is doing and deciding in, in, in pursuit of its purpose. And you see that a big shift as it moved into, uh, you know, into the second proposition, which was actually a for-profit, but for public benefit, um, I think it's a B Corp, um, effort to do good.

And at the same time be viable, you know, which is what the maps are really about. The describe, you know, that's one of the first things that we talk about is they describe how, you know, um, uh, how business works, how capitalism works. So that's something, that's an interesting question. It's interesting to think about, you know, it's been a kind of big stone disrupting everything and it shows.

Some good things like that, collaboration and the idea of commons work that kind of supports LGBT, uh, Northern competition perhaps, but actually kind of core to everything. But it's also showing up on our problems. You know, that if you didn't have flexibility, adaptability, you know, actually shouldn't, we have had, um, uh, a set of building blocks of Lego bricks over there that we could just take.

Um, and instead lots of, lots of us have had to kind of start from, from nothing with a lot of these things. And there's been a lot of duplication, so there's good and there's bad and COVID has kind of. I think it can open the box to that and showing us some of the problems. My worry is, you know, once the, this external pressure, um, ends that collaboration that you're talking about make that will disappear again, that's a shame because actually, you know, there's a ton of stuff that people should be doing in a collaborative way.

Um, okay. Um, we've got another question here. Uh, how do you map across multiple organizations? Uh, for example, one map across an ecosystem that involves tech controlled at the local regional national level. Um, or can you map, help show the overlap?

I mean, it's also in the. Yeah, I think, well, I think from my point of view, it's really difficult actually. And I'm afraid that if you're starting with user needs, then unless you're just talking about your organization or the needs, which you can do as fine, if you're an organization, um, maybe I'm lucky in a way in that.

Um, although I do work for different organizations, I can kind of try to put the patient first. And I think that we do well to do that certainly in health and care. Um, and that, um, people come to harm because we think through things using an organizational centric approach. Um, but I think, I think sometimes just mapping it lots of different ways, um, um, gives you an insight.

Um, so none of them are perfect. I don't think, but it's um, but as you say in the question, maps may, may help show the overlap and, you know, actually what, what is it that, that GDS used to say about putting user needs first? To use a service or users shouldn't need to know your organization structure. Uh, and so even if there are a bunch of organizations under the surface who are delivering that pathway of care or that service and the offending user probably shouldn't know anything about it.

Um, and those boundaries we need to, we need to look at very carefully and understand why we've got those boundaries. Um, why does that person defend that person and that organization and not that organization? Um, when actually they've just got a need that they need solving. Probably doesn't answer the question, but, um, but that's GDS or the old sign principles.

Good.

As I say, I've often thought as I've been trying to make maps and think about them either from different user perspectives or something, I'm really looking forward to the day when we have like minority report and we can do this in 3d and like spin maps and see interconnections. Right. You know, right now it's kind of this 2d experience, but I'm hoping someday we could say, if we have the user here and we have the organization over here and how, how does it become like a tree and those those things.

And you can say, oh, this is the real linchpin. Not that we can't do at and T 2d, like with color and things, but it does get hard. The more complicated you make it to really see the insights.

Okay. Thanks for those. Uh, so mark saying that the shared the, um, the maps, uh, through his Twitter account lead throne, um, I think mark, you can also share that with a gene on the, uh, on slack, on general, and she can add it to the email as well. Um, and it wants to share their, not for the audience. Just send Jane the link and she'll add that to the email going out to, um, attendees tomorrow.

Kay. We've got her own this seven minutes. There's one more question here from Andrew Jackson. Uh, what do you think of open safely? Um, their website is open safely.org, uh, which attacks some of the data sensitivity issues. They moving the code to the data rather than spreading the data around. Yeah, I don't, I suppose I'll take this because it's a UK thing done by Ben Goldacre and team, and I know Ben and yeah, I think it's good actually.

Um, and I think it's, um, uh, been a good response to COVID-19. Um, is it, is it incorporating, um, The use of data for lots of different things. Um, at the point of care, probably not actually, you know, it's a kind of trying to operate in a smoke cupboard. It's not bad, bad approach. It's fine actually. And of course, um, so just for anyone who doesn't know, it's kind of aggregating lots of GP data.

So try and recantation UK, um, some, some different, um, basically electronic health records in primary care and they bring all the coded data in and then make a do analysis using it. Um, but I'm not aware that it's taking feeds from hospitals, for example. Um, and so for the purpose, it's good. Um, is it, is it the future?

Uh, it may be a component part of it, but, um, you know, and, and it's better than we had before, but, um, it, it's not really the kind of transformational, um, um, uh, approach that I think we need for the future, uh, where we put tools to make sense of data everywhere. We need the results. Now I need it in my clinic.

I need tools. Now that allow me to see patient data in context in cohorts. Um, and the danger of systems like that is that we continue to treat analytics as something separate to the day-to-day use of data. Um, and the old days it was used to be go to the ER, go to the ward via the library was now it should be, you know, seeing your patient by other data and, and, and that that's that's, that should be the way that they're moving forward.

Okay. I think this next question is also for mark, uh, how much community care, uh, based on nurses approach and home care services shift can impact those people. Build this on collecting the. Yeah. I mean, I haven't specifically mentioned community care just because of the problem domain, but I actually haven't limited to hospital based care.

It's just that, um, so many health care systems are predicated on the local organization buying large electronic health records and. Stitch together, community service news with that. Um, so, um, um, yeah, community care and home care services. We, we, you know, it's, it's all about integration of care and, um, and, and data supports that.

Um, and for the poor patient, they don't mind whether it's hospital care or home care or put prefer community care, they feel like it should be born health service. Um, so, you know, you could say that's used and build a single massive EPR and just run it all on that. And that's what the now you feel is, um, because we know that we, we won't get what we need for a single monolithic system like that.

It, it will be a disaster and you won't be able to innovate and you won't be able to use it as a platform. So, um, integration of care, really good making systems that are stitched together and feel like single systems really important. Thank you for that. Um, I don't see any more questions here, whether on chat or the Q and a window.

Um, any other questions from any of the panelists for, let me say one, I don't know about the link to the open, safe, open site, but we have been exploring sort of that secure enclave model where the data is in a location and it's secure and calculations are done on data. And then the researcher has returned the return on the calculation and they don't see the underlying data.

And I think that's one way to help, uh, provide users with that sense that their data is still secure. That, you know, Mary has, has not seen their entire health record, that the health records of a group of people have been reviewed. And here's kind of the outcome of that cohort or something. Um, I think it all comes back to, to the ability of consumers wanting to share their data and making it available for those things.

You know, you reach that the, the number of people to have in a cohort to make viable decisions. Um, and I know we talked a little bit about that market, you know, getting people to buy in to data and things. Um, and ultimately people have to have confidence that you're going to treat their data with respect and who owns their data, who owns their health record at the moment.

That's all innovation. You know, you're doing that. Every single person who tries to do anything like that, we'll be breaking new ground and building new tools. We don't have a shared language, shared tooling infrastructure for any of what you've just described. Okay, so we're forced to do dimes. Um, I'm just going to ask each of the, found this Nick, you've got some NUS, phew, uh, messages, or, you know, uh, um, depths or whatever, if we go for our audience before we wrap up.

So we start with, uh, maybe Mary, I think, um, in working with the steam, that's been great. And I think the, the conversation around data is probably one of those ways forward to where, um, it's really important to Reeve our society before.

Um, yeah, this has been a lot of fun. Um, it's, uh, uh, the idea of data is interesting, especially in the health care. It's something that came up in the research project. It's something that also came up in, in the themes with, uh, you know, the contact tracing and tracing and tracking and managing health. And it's something that come up in other projects I've worked in, uh, for clients with, um, how do you get the latest research and use this data to provide better care and how do you make it available sooner than years down the road?

So I think this is a really great, um, area to, to continue to discuss and look for innovation.

No, thank you. I've really enjoyed it. And, um, and thank you to Marian Tiani. Um, they've been great colleagues and new Jen. Thank you. I think, I think John is talking about, you know, capabilities for flexibility and adaptability. That's really, really vital for all of this. So, you know, we do need to be able to adapt and flex to change from the environment and COVID to Seamus.

Okay. Great. So thanks again to our great speakers tonight, Mary Yanni and mark. Uh, and thanks everyone for joining us tonight. Um, there is, I believe a, uh, the networking Eunice, uh, area, so open, uh, and it'd be, there's probably going to be a wrap up session, uh, following this. So if you want to join that or go to networking launch, uh, hopefully Mary, um, Jenny and mark can then join us there.

Uh, and if you've got any more questions, you can also interact with them there. Um, so yeah, thanks again, everyone. And, uh, enjoy your evening or morning or afternoon wherever you are. I know some people are calling from the U S and other parts of the world, so, um, yeah, enjoy the rest of the day. Thank you.

Thank you again.