Podcast Transcript – HERE UniMap - Leveraging AI and Automation to Redefine Mapmaking at Scale

[00:00:10] **Peter:** Hello everyone and welcome to the Counterpoint Podcast. I'm your host, Peter Richardson, and in today's episode we have a very special guest from HERE Technologies who will be talking about a new mapping platform that was first announced at CES at the beginning of the year, and that's UniMap.

So please welcome Remco Timmer, Vice President of Product and Technology at HERE Technologies. Hey, Remco, how are you today?

[00:00:40] **Remco:** Hey, very well. Thank you for having me today, Peter, and I'm excited to bring you up to speed with everything that new with UniMap.

[00:00:47] **Peter:** Looking forward to it. And we're also lucky to have research analyst Mohit Sharma from Counterpoint Research. Mohit looks after our location platform research here. So Mohit, how are you today?

[00:01:00] **Mohit:** I'm good, Peter, and hi. Hello Remco. Thanks for joining us.

[00:01:04] **Peter:** Cool. So let's get into the podcast. Let me start with Remco. Maybe you can, you know, just start off by giving our listeners a, a kind of a brief introduction about yourself and your role at HERE Technologies.

[00:01:19] **Remco:** Okay. Thank you very much. Yeah. Like you said, I'm Vice President of Product and Technology within HERE Technologies. And in my role I manage our entire portfolio. So I'm responsible for portfolio management, portfolio strategy, and I also run multiple of our application development teams. So we have software applications that we run on top of the content that we produce as well with UniMap.

And these software applications yeah, they benefit from all of the new capabilities of UniMap, but also are able to provide us access to data that we use to then build out UniMap again. So yeah, quite a wide ranging

role and lots of responsibilities. And yeah, they're all center around this new map making machine that we've we've built.

[00:01:59] **Peter:** Yeah. Excellent. You know, I think the portfolio at here is, is large and, you know, expanding and this is, you know, very kind of very exciting development. So looking forward to hearing more about it. But before we get into all things UniMap, Mohit, can you give us a brief introduction of, you know, what we do around location platforms at Counterpoint Research.

[00:02:19] **Mohit:** Yeah, sure Peter. So we at Counterpoint have been doing a location platform research for the past five years based on our propriety core framework. And since the starting of the location research, we started with 14 companies across the globe and evaluating them with four main categories and 15 subcategories.

But since the, you know, industries has evolved, technologies has evolved, so does our research has evolved. And now we do evaluate and analyze around 30 companies across the globe, which includes some regional companies from Japan, India, China, and we will across seven categories and 65 subcategories.

And since the starting of our location platform research. HERE has been coming, you know, on the top of our location platform rankings because of its, you know, open, neutral and privacy centric platform approach. And not only that, but also because of its diverse portfolio, it has across different industries and applications and not across all geographies.

And also because of the continuous, you know, development and innovation technologies which HERE brings, for example, UniMap, it has been the trendsetter in the industry, right? So, And with this, it makes HERE, puts here in a very good position, you know, to satisfy the demands of the upcoming automotive industry, which is going through the transition phase from electrification to autonomy.

So, yeah, so this is why we have been doing this research because the industry's evolving a lot.

[00:03:53] **Peter:** Great. Thanks Mohit. So coming back to you Remco. now, I, I, you know, I've, I've been around the industry for a long time and before we set up Counterpoint, I worked at Nokia at the time when Nokia acquired Navtech, which is, I guess the forerunner of HERE.

So, You know, I know that that here has been in the mapping business for a very long time. So can you talk briefly about the journey that here has been on in terms of digital map making and you know, how you've got to this point.

[00:04:24] **Remco:** Yeah, sure. Yeah. Short. I, I can talk briefly about it, but it's actually been quite a long history already. So I think HERE we really started in the, in the mid-1980s actually with a mapping company that was just focused on on creating a first digital map or representation of the Bay Area in California. But you know Going forward you know, we got introduced into the first automotive navigation applications in the world beyond that, indeed, back in, what, what was it? 2006 Nokia acquired what was at the time NAVTEQ, as you mentioned, but also Gate five and created yeah, a new whole new digital mapping proposition that was also going to cater for the mobile. Space. As such, we were the first mobile navigation map, first mobile navigation application back in the Nokia N 95, for example.

Then beyond that back in 2010, we got acquired by a consortium of German automotive OEMs and some additional investors. And they really wanted to safeguard that digital maps would remain available for the entire globe and also serving many automotive use cases as they really saw also, The use cases go beyond pure navigation into new ways of serving people with digital map content.

For example, for safety with advanced driver assistance, but now also for autonomy with evermore autonomous miles driven. And. As a consequence, yeah, we have continuously evolved the map. And I would say at large you could say that, yeah, it started of course with increased coverage from the Bay Area to an ever more global scope.

We are one of the very few Mohit also just highlighted that actually serve with a global map. But that map has become more and more and more extensive as it needs to serve many different more use cases. So where in the past it was maybe just cartography features and roads. Currently, the map resides many tens of types of different what we call classes and attributes to the, to all of those classes.

So the map has really grown in size incredibly, but also in detail where we just in the past would create a standard definition map. For many of these use cases, the map needs to be so accurate that we have created high

definition representation of reality. And then it's not good enough to do this once, but to do this continuously and ever faster and ever fresher.

So at large, I would say, you know, over those many generations of here or close to 40 years now, right? It's incredible to think about that. If we have continuously evolved, you know, coverage, quality, freshness, Of the map and continue to serve many more use cases. And as you also highlighted, you know as, as you started five years ago with a landscape of maybe 10 or 15 different map making providers.

Yeah, I, we really see that location intelligence has become more and more relevant well beyond automotive, but definitely in transport and logistics and many other industries as well. And as a consequence, yeah, you see the whole value space and really, really grow. Yeah. So you know, it's 40 years and there's a lot of big changes along those 40 years, but it's never getting any less exciting or any less innovative.

I think this space is really maturing now very fast. And yeah, I think couple of key drivers to that, and maybe we'll get to that. Also later on in the podcast, you know, we have now. Ever more capable sensors, ever more connectivity and ever more users that are in real-time using map content. And all of this, of course, creates a lot of signals, a lot of data that you can use to optimize the map, but also a lot of behavior that is actually informed with map content behavior of people and behavior of devices as well with these add-ons and autonomy features.

So yeah, it's, it has been exciting, but yeah, it's just getting yeah, more and more interesting I think.

[00:08:22] **Peter:** Yeah, so I mean, a lot of what you talk about there is the. Complexity of you know, first of all kind of building a representation of, of the real world, but you know, the real world, as you say, is, is pretty dynamic and, and changes.

So there's a, I guess you have to kind of balance the complexity of that, but also with. You know, keeping it, you know, relatively simple at the, at the same time. So can you talk a little bit about some of the different challenges that, you know, you face in, in trying to keep that balance, but also keeping maps fresh and, and up to date?

[00:08:58] **Remco:** So I think if you would like to keep track of everything that's ongoing in the world, you could just expose all sensor

data, right? And everybody would then need to interpret all of that sensor data. But those are terabytes a second in a way. And of course, humans and machines can't deal with that kind of amount of data.

So the art of mapmaking is really to then derive what we call feature observations out of that, things that are representation of sort of truth. At that given time and make that so compact that it can drive real-time behavior of people and devices alike or processes alike. And I think everything that we have been doing is to try to optimize the amount of signals that we can process.

The minimum amount of time to the maximum amount of quality and coverage. And, and that's been a continuous process. And UniMap that we, we talked about in beginning of podcast. That's really the, the very start let's say the, the latest sensation. Of all of this again, and you know, UniMap is in a way the first truly highly automated sensor, data derived mapmaking machinery that we built.

We always had automation to a certain extent, but now we really are able to make leap changes forward and automate more and more of the sensor data that we get in. One of the other critical characteristics that we really aim to optimize for kind of is hidden in the, in the word UniMap. So UniMap stands for also Unified map.

Where in the past, you know, we had maybe separate map products serving separate use cases. Now what we wanna do is, is really to enable our customers to sort of cherry pick and say, I want those map layers because those is, that is exactly what I need to feed my. User, my devices at skill most effectively.

And they need to be rest assured that sometimes those are maybe map layers that come from our HD map product map layers that come from SD MAP product, but they work in unison, they are consistent. And as such they, we can really cater for that. On the other end, we also unify the in data and that's also been a, a massive leap forward, where in the past we had more of a direct connection between sensor data and then derives map.

Content piece. Now. We first unify the sensor data. We overlay we conflate that and then out of all of that combination, we make the best possible observation, which gives us more resilience. So we can do with higher of, of input data. But also it really improves the quality. You

basically see the same thing from many more different perspectives, and that can lead to a better observation, that can then better serve the user and the vehicle.

Yeah, so those are just some from of those elements that we have optimized in.

[00:11:30] **Peter:** Right. Excellent. I want to kind of dig into a little into UniMap a little bit more in a minute, but if I can just bring Mohit in here. So, Mohit in in the research you do, you talk to, you talk to here, but you talk to a lot of other companies involved in the location ecosystem as well.

Can you kind of reflect, you know, some of the broader challenges that that you see, you know, companies Struggling with, and, and, you know, you, you can highlight here.

[00:12:00] **Mohit:** Yeah. So before answering this question, I just want to, you know, make one point when Aramco talk about location intelligence. So what we have observed in our research that, you know, over the past years company used to collect a lot of data, but without the context and, and there start realizing the power of location.

When you put the location as a context of the data, it becomes more useful because, companies started knowing, okay, this person is purchasing at this, you know, from this store earlier. They used to know the, just the behavior, but not, you know, which store and what places. So this is why over the years we have seen the lo there are a lot of location intelligence companies, but not so many mapping companies, but they are using the location data somewhere somehow.

So just wanted to add the, you know, the trend in the location intelligence and coming to the point of challenges and map making. Peter, I think mapmaking is really, you know, huge CapEx business. It took us a lot of huge investment to make them map some city or region or for country instance. And we are living in a very, you know, dynamic ever-changing world where the every day the roads are getting constructed or the new buildings or you know, businesses emerging every day and.

To keep those map fresh and updated, requires huge maintenance cost and also a lot of manual effort, like Aramco said, even though it's automated versus not fully automated. So still you need a lot of manual

efforts. And not only this, but you know, the, to detect those variable changes you right? And to implement those changes in the map.

And then labor, those updated map to the customers is only takes a lot of months. So the turnaround time for delivering the updated fresh maps is not, you know, in the movement. It's usually in the months. So there, and we are living in a very fast driven world. So there is a huge gap between the expectations and reality.

And this is why the people are facing challenges. Because if I have to go to a road and I realize it's blocked, or if I'm a, you know, EV user and there is no updated maps for new charges or something like this, I might face problems. So this is where the, you know, the update and, you know map freshly maps updated are really important, especially for the ADAS also.

So these are the challenges which we I, we have experience in our talking to different players in the location platform.

[00:14:25] **Remco:** Mohit, Makes a really important point, right in the beginning of your statement as well. It's like maps can drive contextual understanding, and I think what we've seen in the last, let's say decade of the internet, a lot of it was to do with personalization.

And personalization came a lot from profiling humans, right? Social media companies are of course, you know, known to do this very, very well and make it ever more relevant. But I think the next big leap in relevancy is all about contextualization. So it's not only relevant to you, but to you at this given time in this given environment. And I think that can really bring a leap forward to many industries. Not just automotive, not just transport and logistics, retail commerce all kinds of other things as well. And I think, yeah, a lot of people are waking up to that and, and quite often I think the context maybe drives your intent even more than your personal preferences.

Do. So it's because you're in this environment at this given time, you have an intent to. Purchase something or you, this is relevant to you now, maybe more so than just because you are Remco, for example. Right. So I think this, this whole opportunity basically driving relevancy through a combination of personalization and contextualization, I think that's why we see a big yeah, interest across many industries for the use of, you know, digital map content to help contextualize information for the user.

[00:15:43] **Peter:** Alright. And just sort of staying on that theme and sort of bringing in, you know, specifically the. You know the UniMap story here. So, I mean, you talked earlier Remco about you know, here's sort of standard definition map and then, you know, developing high definition map. So where does UniMap fit in to this picture?

Is it, is it a completely new platform or is it a new, you know, kind of overlay? Or is it something which, you know, how, how does it actually kind of fit into the overall picture of the you know, the products that, that, that here is bringing to market?

[00:16:23] **Remco:** Let, try to visualize the picture. Yeah. I think where in the past we almost had isolated columns of maps.

What we now did in UniMap is to basically unify on, on a common data model. So this is one consistent data model across standard definition, high definition, real time static, indoor. And outdoor. Those are all of the different mapping domains that we used to have, and they're now all served by one data model.

And this allows for great flexibility in, in using combinations of the classes and attributes from all of the historical maps. But now serving your particular use case. But what is really critical, it's also driving consistency. So where in the past we had certain HD map attributes serving one u use case, the SD map attributes, serving another use case, et cetera.

Then of course you have this, you have the, the challenge to keep that in sync. And so it acts as consistent as possible. But like we just explained, and we'd also explained, you know, it's very, it's very big process, very capital intensive, very, very process heavy human and machine processing. It's hard to keep that entirely in sync.

And now with this new way of architecting it, we are rest assured that it's absolutely consistent. And that's more and more critical as maps don't only serve a single use case in the industry. They serve multiple use cases in the same industry. So if we would look at automotive, for example, right?

It's not only serving your navigation map, but it serves your advanced driver assistance with speed limits or with traffic events, or traffic alerts or hazard warnings and these kind of things. And it's even serving your

autonomous driving features. And what is then critical is that. Along all of those use cases, it can act consistently so it doesn't have a conflicting effect on the user because that would basically, the user would lose trust in the navigation map or ADAS features or the AD features.

So consistency across all the use cases is one thing that we've really optimized the UniMap for. So to paint a picture, it's one common layer on the new fall of our map projects. And what is also critical is that the emphasis now is really on automated sensor data derived map making. And the, let's say the, the fullback scenario is human curation and further human training.

Where I think in the past, you know, the emphasis would've been the other way around. It was a lot of human operators that were supportive with automation. Now it's almost the other way around. So I think that those, those are like key things. The two point you know, a 100% automation, I think yeah.

We'll never get there as, as we also had never had a hundred percent manual labor either. Right. So, yeah, and I think in the end sometimes, you know, it's still humans training the models and perfecting the models and making complex decisions where synergy is required. You know, humans are really incredible.

[00:18:55] **Peter:** Can I pick up on, on this idea of sensors? So can, can you expand a better on that? You know, so we have lots of cars that are driving around. They're essentially sensors, right? So they're, they're feeding a kind of constant stream of data back. You know, how, how is that incorporated? And you know, you as you said earlier, you can be kind of overwhelmed with.

You know, terabytes of data a lot of which might be irrelevant. So how, how does the system kind of pick out what's important versus what's Yeah, maybe superfluous.

[00:19:30] **Remco:** Yeah. Yeah, it's a very good question. It's also, I, I would say something that we continuously perfect, but to give you a couple of you know, starting points first, what type of sensor data?

Right. So most famous probe data, so there's are little GPS drills that tell you who was where, at what given moment in time. We have. Area photography and satellite photography that we depend on. We have LiDar

and other kind of radar sensor data that gives a 3D view of the world ahead of you, but also video feeds coming from from vehicles or mobile phones, et cetera.

What is really critical is that we, we, first of all, before we ingest it, we really anonymize it. Be sure that you know, no identification or re-identification can be done on top of that data. So the anonymization is actually a big part of what we do. You know, we are. We are really a privacy by design, privacy by default kind of architecture underneath.

So that's all the, the kind of sensor data, but how do you indeed prioritize what sensor data to process? I think that comes with basically also having software clients installed into the devices in which we deploy our, our map content. We can basically see, you know, where are they? What part of the world is really relevant to them?

How often are they traveling there? Is it really worthwhile to keep this up to date and to prioritize map updates in this this area? Do we see any gaps between how they perceive the environment and how we inform them about the environment? So that's gap detection. And you could even go proactively and say, Hey, you know, there's areas in the world where we have our, our confidence score is basically lowered because we haven't updated the map.

Any, any time. So can't, can't we run a campaign? So I think this whole idea of continuously optimizing yeah. What sensor data to process is, is really, is really critical because indeed, if we would keep the entire world up to date at equal level, yeah, it's probably not that useful in the first place.

And, and it would be an incredible cost associated to that. So yeah, it's this, this is the, the balancing act we always have to do. Of course, also we have customers informing that, right? So if, if customers have a need to extend the map or extend the coverage of the map or the attribution of the map in a certain area, yeah, then we always see how we can serve them.

[00:21:33] **Peter:** That's an interesting point actually, because I think one of, if I understand right, so one of the benefits of UniMap is that, you know, there, there's a kind of a standard map that, you know, all of your partners can, can access, but in addition, partners can you know, overlay their own geographical data onto the UniMap platform.

Right? So I dunno, let's say I own a container port. Can I then sort of develop a, you know, a plugin? I, I'm not quite sure what the right word is, but you know, a, a view of my container port that I can link to UniMap.

[00:22:14] **Remco:** Exactly. I think what is unique about UniMap, it's not only let's say the common data model underneath the HEAR content, but it's an extendable data model so people can, our customers can extend and reach it with new and new attributes, but they can also, as a consequence, extend our map or substitute their worldview with our worldview.

So and we indeed particularly see a lot of interest in transport and logistics for this. So it could be that you would want to map, for example, a private yard or a harbor or you know, big areas that we don't cover in our public map, and that are private to you and to your business, but nonetheless, for example, need to be navigated by you know, truck drivers or autonomous vehicles.

And as a consequence, you'd like to extend the map. Sometimes it's also about, you know, just. encoding your worldview in, into our map. So if you're a very experienced Operator, and you have drivers that travel the same roads all the time, maybe they're able to achieve a higher, what we call throughspeed so actual speed on the road than our average drivers do. Right? And you know, these days it's getting more and more important to have extremely accurate in global supply chains. Consumers want this as well. So being able to encode your own private attributes onto that road segment, for example, your own three free speed can get you there.

So yes, it enables people to extend the map. And to substitute parts of our map with their own worldview. And what is critical is that that really enables them to differentiate from competition. If everybody could basically buy the same worldview from here, then yeah, we're all equal. Right? And, and quite often because you operate a certain area with your fleet, cause you're a mobility operator or logistics operator, you have unique insights and you'd like to leverage that.

And I think in the past we had a lot of. Customers coming to us and basically say, Hey, you know, I have a lot of data. Can you help me figure out how to make value out of that? You know, that was really, I, I would say like five to 10 years ago. Now we see more and more of them smart enough and say the only way to really gain value out of that is to extract this kind of my understanding of the world out of that so it can

then feed my, my team to be more effective in the real world environment than my competition.

And this we call basically private map making on top of our UN architecture. Indeed. And yeah, we see incredible surge of interest in that. And because that's the way you differentiate from competition to meet yeah. the evermore, the ever rising needs of of, of the consumers.

[00:24:30] **Peter:** And are there other benefits or you use cases that you would particularly kind of highlight here?

[00:24:40] **Remco:** I think I highlighted a few rights. I think, I think the consistency across different use cases within the same domain, and that's really important. It instill, it installs trust with end users. And so it just becomes more reliable if if all of the systems that are informed by the map. Act consistently.

So I think that that is really one thing. The whole extendability and customization, driving your differentiation is another thing. And at large, this whole more automated sensor, data derived mapmaking just creates a, a more accurate, more yeah, more extensive understanding of the, of the real world, driving all of your business processes.

And I think, you know, the benefits of that go in transporter logistics like we just talked about, but into automotive and many other other domains as well. What, what we see is also just that so many more customers come in with a wealth of location relevant data that they want to have processed.

So us being able to do this at skill for them, I think is, is really yeah, really help them to differentiate from that competition. Mohi, do

[00:25:40] **Peter:** Mohit, you wanna give a reflection from a, you know, kind of broad industry view?

[00:25:99] **Mohit:** So I just wanted to add to the Ramco point. So what we have seen in the, like other technological platforms bring your data has been, you know, initially technological platforms since started with their own, but they realize that the consumers have also their own data and they want to give this leverage to bring your own data.

And we have seen this in the, you know, apple CarPlay or, or in the automotive industry and other technological platforms. And it's also being, you know, duplicated in the mapping of technology. As Remco mentioned, a lot of consumers have their own data, but they don't have the mapping services where they can just overlay on the maps and see all how the, the data looks like on the maps.

So this is where the private mapping has been according to our research, is also very good. For HERE is, you know, especially for the, you know, transport and logistics and mining fields. So this is what's the one point I just wanted to add.

[00:26:48] **Remco:** What we also see is that, you know, customers are really interested to to, to really just en enhance a worldview with their own. They don't want to have to manage a worldview. Right. So there's, there's a lot of map content out there, but if you, if you go and use map content, sometimes you end up with the burden of having to manage that. Common denominator rather than the differentiator and what you want in your organization.

You know, not everybody wants to be a mapping company, so a lot of people wanna make use of maps at massive scale. And I think what we really focus on is to enable our customers to focus on those private layers, those private attributes that really help them to differentiate, but not worry too much about the common denominator, that worldview I'll be sure that that is sort of forward compatible and is kept up to date so you can focus on those things that really make a difference in, in your business.

And yeah, I think that's also one of the things that really sets us apart. We've solved this forward compatibility issue you know already for decades. It's always been one of the challenges and we continue to do that of course. And that's really nice. There's a lot of companies that initially, you know saw that location intelligence informs their user base.

So whether it's you know, ride haters with their drivers or it's you know, the people using public transport or, but yeah, they, they, they took it upon themselves to then, you know, User a map, create a map, keep it up to date, but that if their business grows, you know, you can do that when you're small, but when your business grows and covers more, more parts of the globe and serves ever more people, it needs to be ever more real time.

You know, it's, it's a waste of your, of your time to have to manage a global public worldview. You'd rather be focusing on those things that really help you you know, differentiate from competition.

[00:28:29] **Peter:** Got it. Okay. So before we wrap up, one last big question. Timelines, right? So I think you announced UniMap at CES at the beginning of the year.

We're now getting off halfway through the year. Is it commercial yet? You know, our partners. Ingesting it into their own platforms, vehicles, so on and so forth. When do we see the, you know, the first full integration of, of UniMap?

[00:28:58] **Remco:** Yeah. Yeah. So like like always, you know, with very innovative technology, we try to co-create it together with a couple of leading customers.

It's also a way to sort of be sure that this is what they need as well. Right. And like we announced at cs one of the key customers that we work with in co-creating UniMap was b w. They're gonna be using the result of UniMap already this year. Not just them, but also other selected customers.

And As well. And then yeah, pretty much all, you know. All of our other customers in, in these domains will get access to UniMap over 2024. And UniMap is gonna continue to perfect and, and gonna continue to extend of course well beyond that. So I don't think UniMap is done at a certain moment in time.

And, and then just be delivered. It's it. The first results of that are gonna be consumed already this year, and more customers gonna get access to that next year. And then UniMap is gonna continue to be on that journey you know, towards ever, ever more automation, ever more accuracy, ever more freshness, ever more coverage and also this whole combination of what here.

Uses UniMap map for, and what our customers will use UniMap for in order to create our private maps that can connect to, to the hear base map yeah, that will all expand in the, in the years to come. So this is really just a new generation of our map making capability.

[00:30:22] **Peter:** All right. Excellent. Thanks.

Thanks, Aramco. Mohit, any final comment, comments from you?

[00:30:28] **Mohit:** So, yeah, I believe the coming years will be very exciting times mapping industry as mapping will be become one of the key enablers for different technologies like autonomous vehicles. And in the next two, three years, we can see more rapid advancement in the mapping technology with the, as the AI and the machine learning models will keep go evolving at a greater pace.

So I believe that. This is just the beginning of, you know, evolution of the mapping, map making or mapping tech technology. In coming years, we'll be seeing more fast paced maps and everything.

[00:29:08] **Peter:** So. All right. Thanks. Thanks, Mohit. And thank you very much Remco for, for joining us today and explaining a bit more about UniMap.

I'm very much looking forward to seeing it in action.

[00:31:10] **Remco:** Thank you, Peter.

[00:31:15] **Peter:** All right. Yeah. Thank Thanks guys. And for our listeners, thanks for tuning in. As usual, you can listen to our previous podcast on counterpoint research.com or on your favorite podcasting platforms. Do subscribe and and look out for notifications of, of new episodes coming up.

But with that, thank you very much for joining us and look forward to seeing you the next time. Okay. Bye now.

