

## Interview 16

Interviewee	18-Prov-O
Interviewer	Ashraf Shaharudin (TU Delft)
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### Interviewer

My first question to you <redacted>, how did OSM get people to contribute data at the early stage?

### Interviewee

Yeah, it's funny because it's it wasn't like, OSM was like, OK, we need to go out and get people to contribute. It was more like there was a community of folks who wanted to do it together and saw that as the vehicle there was already in that time, like early mid-2000s, lots of efforts that are collaborative, all sorts of things; Wikipedia had started like in 2003, burgeoning open source world... So there was already kind of a notion that if there's something that you need, you can get together and do it together. And so the early day, at the start it was really like there were a lot of projects to do, Wiki mapping, if you will, collaborative mapping. There's a need in a lot of people who were attracted to the community to start contributing and really to actually start figuring out how to do it because at the start it's not like we had a working system and then we released it to the world. We actually had to invent the practice of how it's done and the technology where people who were very interested in working with maps, with map data, or were excited about doing map making in a new way.

So there was a lot of very technical people, I would say, at the start or people involved in map making who had curiosity and we're excited about the potential of doing things openly, doing things on the web that had never been done before. And so that's really what led to the early stages of the contribution of people coming to build OpenStreetMap.

### Interviewer

And so this community has started even before OSM is OSM?

### Interviewee

I would say. I mean, there were pieces of it drawing large part on the open source community. A lot of the people that were -- a lot of the early engagement and building awareness around the project was with local open source user groups, which were often associated with computer science departments at universities.

There were many communities that were starting to come together. There were a lot of people who are very interested in open source software development and there would be user groups, often associated with computer science departments at universities across Europe and the UK. There were kind of what became known as web 2.0, but they're like people who were just experimenting with new things of ways of building on the web. I saw most where I was from at the time, <redacted>, and also there was a lot of like people doing very creative things with the web and in the UK at that time. And then there was also an element of -- this was also around the time when mobile phones were just starting to become more pervasive. This is pre-smartphone, pre-iPhone, pre-Google Maps but mobile phones were becoming much more common especially in the UK and Europe and also the availability of GPS units that actually had accurate information.

This was a big change that came in 1999 and it was around, just a few years later, where you could actually get a reasonably priced consumer grade GPS unit which had a sufficient accuracy that you wouldn't need professional level equipment.

So that actually led to, in the UK, I remember, a lot of artistic experimentation. There was people getting artistic grants from the Arts Commission. There were folks doing the same thing in Europe as well, where they were experimenting with these new technologies. And so that also was sort of part of the scene or part of the community or part of the thinking that went into.

Of course, Wikipedia was then a couple years old and it was growing fast. They're still very early, but that was also massively influential on kind of the idea to do OpenStreetMap. So all of those things were kind of in the air and that sort of drew on those people, and people were really got interested in applying all these approaches, these creative open approaches, based on the web, to mapmaking. That was sort of the intersection of all these things.

### **Interviewer**

And how did OSM then maintain and cultivate this community? Because it could be just an initial enthusiasm but then for decades, it is still maintained. So how did it do?

### **Interviewee**

Well, I think part of it is a bit about the design decisions of how the OpenStreetMap was set up. One of the key things, one, it's completely open for anyone to contribute your data in the database and then the data is very immediately available. I think this was key to the satisfaction of people contributing, kind of like immediately seeing what they're contributing is something that is available to everyone.

And then, another key design decision was the use of tagging rather than formal schemas or complicated ways of organizing information. It was basically said, well, this is, free key value tags and if you want to map something, figure out how to represent it using key value tags and go ahead. There is no approval process. There was no like overarching architecture and schema. It was something that grew and not just wildly, of course, there was gardening of that and lots of debate. But by making that a part of intrinsic to actually the process of creative data was also coming up with how you represent it was really powerful. I think that unlocked a lot of the engagement, creativity, and excitement in comparison to other processes like very long process, like determining what is the way represent geospatial data and then there's kind of like structured ways of proving that and that's in some way is not as fun.

So it was always fun to do -- I think in the early, especially for the first five years, most places you would go, there were big blank spots on the map. It was super motivating. Nowadays you look at OpenStreetMap, there's data everywhere. You have to work harder to find out what new or what's changed or what kinds of different properties you want to add. Having big parts of the map completely like a blank canvas is very motivating. I remember when I map right in <redacted> where I was living at the time, you feel sort of like kind of ownership or kind of it's your contribution and that is actually very being recognized for that and being part of something that's so much bigger, really really motivating.

The other thing that I think really good was made very social. This is like, every place is a little bit different in the UK, but it was like we always do pub meetups, we did a weekend in the Isle of Wight

... getting together and make it a social activity because it's very hard to map everything on your own. At that time, you really had to be together and be in a physical place. I think that was a really key thing that was exciting for people because largely these people who are involved are computer people and so something that actually got you outside and got exploring was very powerful as well. Of course, that's still an element of it, but not as much, because now we have access to satellite imagery. So I think a lot of that drove kind of like the excitement and people were very into it over the years. I think as time went on, ultimately seeing OpenStreetMap getting used in substantial ways, it was a very great driver for people to contribute.

<redacted> Humanitarian OpenStreetMap Team and seeing the Haiti earthquake and then <inaudible> that came afterwards, seeing that contributions could be directly used was super motivating. Talking about like we were always -- the thing that we wanted in HOT always was like can you get a picture of like a map that uses OpenStreetMap in the response, in the operation center, or in the field as someone is doing search and rescue work or doing some kind of whatever kind of response work they had to do. Getting that picture was amazing. It then drill people to want to contribute more and more.

And then I think all of these things sort of remain and then they kind of built each other. As OpenStreetMap proved that the quality of OpenStreetMap data was fit for purpose and could attract more serious interest by companies overtime, with companies bringing OpenStreetMap into their data processing workflows, the extent of where you see OpenStreetMap grew and grew, and so at a certain point there's excitement like, oh, we are winning, OpenStreetMap is actually becoming the thing that we hope to be. It was never like something that was definitely going to happen. It was a wild, wild bet. And actually seeing, realizing that the biggest companies in the world, biggest organizations in the world, as well as your neighbour, anyone can use and contribute the data, it's very powerful to be a part of that thing. So, I'd say that propelled the growth of OSM as well.

I think we're at a plateau, honestly, in terms of the growth of the community and it's something that we need lots of lots of work to engage more kind of people. It's like there's you always need to be inventive. I think it's natural that people get excited doing something for a time and then they're doing something else that catches their interest. So they do something else. And so, in order to sustain, you constantly have to be expanding to new communities or new kinds of interests in order to bring in more awareness. There are millions of people who have registered for OpenStreetMap.org but it's a very long tail of people who actually contribute the bulk of it. There's like a long tail of people contribute a little bit and then people who really like get into it and you need to find those people -- they're out there -- continuously, but that requires kind of expansion and growth to new communities again over time again and again.

#### **Interviewer**

And then on that remark, what do you think are the critical factors to ensure the sustainability of the data contribution for the next decades?

#### **Interviewee**

I think one thing that <redacted> working on quite a lot now, the foundation board ultimately, step by step, is -- I think -- part of it is how we stepping up how we communicate in our core engagement platform of OpenStreetMap.org. I think it's long overdue to have a refreshed approach to what's presented there and we also need to refresh approach to how we communicate. All this should

reflect OpenStreetMap's stature in the world, which is just a principle of the infrastructure of the world, of the Internet.

If you go to OpenStreetMap.org you don't really get that, you don't get that from the kinds of communications that we do, and so I mean what is it going to take us over several decades? I mean I can't say what it's going to take for five years from now but I know, right now, I think that's really critical for us to -- you have to be relevant for what we are and what's happening today. And that's just takes some effort, I think, on the kinds of experience that is offered on OpenStreetMap in the way that we talk about it.

**Interviewer**

And what are the typical profiles of OSM data contributors? Are they mostly commercial, NGO, researchers? And are they concentrated in certain domains? And how is the distribution of data contributed with regard to geographical context, are they mostly from developing versus developed countries? And so on.

**Interviewee**

They are all of those things. It's very diverse in terms of the profile people who contribute. I think largely people who do have a little bit of a technical bend. But within that, it's everyone from students to volunteers to professionals to people who are working commercial companies to researchers who work at international organizations, people who are early in their career, later in their career. It's really wide.

Now, can I say, do I have done a study that I can say that with certainty? No. There's probably some data points to look at. OpenStreetMap Foundation did a survey a couple years back where they asked some kind of profile information and there may be something interesting. That's a selection of folks who are so involved in the project that they're actually members of the OpenStreetMap Foundation, which is still like a couple thousand people, and the number of people who are today actively contribute to OpenStreetMap runs in the 10s of thousands. But I expect that pattern still holds geographically. You look everywhere, there will be something that has been mapped, but yes, there's still, more of a concentration in Europe and in North America and in parts of Asia. There are presence and activity all over but you do have some countries where there may be one person or there was a person who worked on things a few years ago.

Again, I think that survey, the OpenStreetMap Foundation survey may have some questions on geography and you would see that pattern but that's where efforts like Humanitarian OpenStreetMap Team has been massively helpful in expanding that; YouthMappers program has reached people in all sorts of geographies and these are students early in their career and so that can lead to greater and greater use.

But it's certainly an interesting question. I think there's a mixture of people who have a bit of a technical bent, but also who have a bit of an idealism that just sort of comes with the project, so there are people who are still excited by the vision that gets people captured. Those two things are kind of the commonality, no matter where someone's coming from or what they do.

**Interviewer**

And how did OSM garner financial support through membership and donation at the at the early stage?

**Interviewee**

Early on, it's very scrappy. Sometimes, it was like asking for some -- a lot of it was free time. It's just people spending their time doing it or asking companies for a small, relatively small, amount of money to support doing some development or travel. A lot of this was just covering Steve [the founder]'s time. [Also], getting donated hosting space from universities or even donated old computers.

Then, there was at some point where our needs started to grow. And I think we started to do fundraising campaigns where we would just ask people to contribute money with the foundation membership. There was always been a membership fee but that's never been like -- it's not insignificant, but it's not like enough to keep things running by any means. It's more of just an indication of the level of commitment and seriousness that you have for OpenStreetMap and it was always meant to be kind of a relatively low number. And as time went on, we've even set up ways for people to get membership without any financial contribution -- if they are active contributors, there's a program for if the money is a barrier.

So it was very scrappy in the in the early days, just like kind of a mixture of going to companies that might be interested, getting donations of hardware and software, a lot of free time, some fundraising campaigns to get people to contribute and we raised £50,000, that was a big deal.

**Interviewer**

And how did you then scale up this financial support?

**Interviewee**

One other thing that we did is we run a conference State of the Map, and while a lot of the sponsors for that just goes towards running the conference we do see some -- in some years -- we do see like more than sufficient money to have some profit from the conference.

We also -- we did more fundraising campaigns, donations from companies. Well, some time when we got bigger, we were the recipient, at some point, of just like random generosity. We received the Pineapple Fund, like a big Bitcoin donation, several years back.

And it's only recently where we really like, as we've started to, -- it's only recently that we've had paid staff who are working with OSM full time or on a lot of their time.

**Interviewer**

Sorry, you're freezing now.

**Interviewee**

We need to raise significant more money on a regular basis and that has been what I've been thinking about a lot these days. And so in <redacted>, I did a fundraising campaign, largely with a big corporate users, in order to raise enough money so that we could hire our site reliability engineer and start to pay for a contractor to maintain *ID* <unclear>.

And over the past several months we've been working on fundraising campaign where we're doing that again through like corporate membership fees -- that's been a big help. So corporations, this is actually going back to like 2015. That's how we'd have administrative assistant help and other running expenses.

But we're looking to increase what we're expecting from donors, whether they're companies -- we're going to do a broad based campaign as well so like people involved in OpenStreetMap, the bigger community can put a little money in.

And then I think ultimately, we're starting to look at grants and foundation work as well. So we'd have a little bit more of a diversified fundraising sources to go after. But I mean honestly, it's only until very recently that we are running expenses increased to the point where just kind of doing it ad hoc thing hasn't worked.

Now we have to be more organized about it. That doesn't mean like we're going to grow exponentially. We're going to grow very considerably. And it's just like we need a handful of people to do the work. And we, I mean as always, there's growing user needs and growing contributor needs. And so we need to continually refresh our hardware, our hosting is paid for and those kind of costs as well as starting to support more forward-looking software development, whether it's on the OpenStreetMap website or some of the many components which are in the OpenStreetMap software ecosystem which make it all run, make sure that that there's resources for the engineering needs which exists. So still very carefully growing, but we're not going to be Wikimedia Foundation, but running this OpenStreetMap isn't free. OpenStreetMap is free to use and to contribute to, but running it isn't free.

**Interviewer**

What are the resources that OSM has now and how does it compare to what you have in the early stage?

**Interviewee**

What do you mean by resources?

**Interviewer**

Like the infrastructure, the human resource, yeah.

**Interviewee**

Oh yeah, we have as far we have staff of three. We have administrative assistant, we have a set reliability engineer, and the ID editor we have maintainer, so that's our paid staff. *Make certain employees and contractors* <unclear>.

I think our operations budget is largely covering like hardware, and hosting has grown but it hasn't grown exponentially. I think some changes -- in the early days largely relying on donated hosting. Now we have data centers and the primary ones in Amsterdam, I believe, and also one in Dublin. There's a lot of different server components. I don't know all the details of this, but that's certainly like, especially with our *SRE*, with grant coming on, it's always been managed like an incredibly professional level even before when it was all volunteer, but now we're really like dedicating effort to. And then we also rely on, where it really makes sense, on cloud services to supplement for particular services so like, I can think of our tile generation infrastructure is hosted on AWS and our CDN to distribute map tiles is generously supported by Vastly <?>. And so, increasingly, part of the services we rely on our cloud providers rather than self-managed infrastructure.

**Interviewer**

OK, in hindsight, are there any shortcomings of OSM that you wish were done differently?

## **Interviewee**

One thing I'll say is that the things which people sometimes have the complaint the most about or there's the most complication with have actually been essential. Like I said, you asked me before about what made things work and like I mentioned, the tagging schema is really essential. And then the other thing that is obvious I think, that a lot of people come to appreciate, is the viral licensing, ODBL, that is part of OpenStreetMap has really been essential for keeping OpenStreetMap a cohesive project and community so that like contributions do come back.

I think if we had a more permissive license then there would have been use of data and then not really so much worried about like contributing back. While both the license and the tagging scheme caused a lot of headaches, if you are trying to use the data, I think it's just the price that we have to pay because otherwise I don't think this project would be useful.

So I guess what on those points I'm saying like, there may have been a time when I said: oh, maybe we should have tried to change the license in the different way. But now I don't.

So I think the thing that I've spent most of my time on and the thing that I've learned the most on is on governance and on the role of the foundation within OpenStreetMap. And I guess I feel like we maybe we could have come to the point where at faster. I think we there's a shared understanding and we're working more to articulate the of kind of what is the foundation there to do and what are the kinds of things that it needs to do, there's recognized, in other contexts, you might talk about market failures. I don't want to say community failures, but there's things where there's a need for organized support, and that's always been recognized in terms of like we need to have servers and we need to have hosting. But I'm also amazed that -- I think we recognized it, but that we operated on volunteer system administrators until just one year ago, like one year ago that was all volunteer, sometimes people would have some of their time sponsored by their employer.

I think there's some things we could have done faster to get to the place where we are and our organizational development, but it's hard. Again, I think there's some advantages with how we've done it, where it was just like, if it's what we need to have, if it's going to happen, we need to have volunteers. I think in some ways people feel like, well, I'm gonna have to do it. No one else is doing it. I think that took us a long way, but we probably could have gotten to where we're thinking about the foundations role a bit sooner.

## **Interviewer**

OK, now I'm gonna talk about open data ecosystem. What is the vision of a sustainable open data ecosystem for OSM? What does it look like?

## **Interviewee**

I mean, that's a big question. And I mean, I don't know if there's a single vision at all on anything in OpenStreetMap. Some of the things that makes me think are, I mean it is certainly critical for there to be for OpenStreetMap, for geospatial data to be openly available, we rely on that a lot. Of course that means that there could be data that we might consider bringing into OpenStreetMap in some way.

But, one place where we're still very much reliant on is on access to satellite imagery through commercial providers. We're not too far away in the future for when satellite imagery that's high resolution enough for what we do with OpenStreetMap would be freely openly available. Certainly in

other work that I do, openly available earth observation data is pretty essential. Sentinel 2 is something that we use a lot at my work.

But I mean the vision, it's a big question and I think I'd have to think a little bit more about it to have something smart to say about what that mean. I think we're part of -- one thing I'd say is OpenStreetMap is maybe one of like the most used or one of the most used -- it is right up there in terms of open data but we should not by no means be the only one.

And I think in recent years it's been kind of, I don't know if there's like a <inaudible> on open data, but I think there's a recognition that that's not sufficient for data having an impact. I'm almost felt like I don't hear open data as much, to be honest, though, it's sort of underlying everything. I think OpenStreetMap could really be a part of fashioning that vision so that people don't forget about open data.

I think it's very easy, especially if you're talking about like government policy, to change that posture because "oh, the ROI on releasing that data is not [much]". Well, of course, because that [i.e. open data itself] is not sufficient. Look at everything that came around OpenStreetMap to actually make it work, make that open data, create it and then to use the data.

Yeah, I think we're probably at a moment where, like there needs to be a bit of a revitalization and a recontextualization. We've made me stepped away too far from open data because it would have got a little bit of a *shade* <?> on it just because I think a lot of it just a hype cycle. And so I think it's time - I think OpenStreetMap would like to see -- I would like to see kind of a maturation but also like it retain that recognition of the key part, the key part for open data.

### **Interviewer**

So I wanna talk about Overture Maps Foundation. How could Overture -- because as I understood it, it's based on OpenStreetMap, so how would that foundation potentially support or hinder the growth of OSM?

### **Interviewee**

Yes, good question. I think one thing that has been in all the discussions that I've had with Overture and others have had with them, they've said they see OpenStreetMap as complementary. It's not something that they're trying to replicate and that there are certain things -- I think fundamentally what Overture is companies have data processing architecture and do a lot of work with OpenStreetMap and with other data sources, with other open data, and with other sources of data themselves in order to produce products, and what Overture represents is bringing that into a place where there is collaboration and cooperation among companies which are doing that work.

And I think that's very much a good thing. I think there's potential for improving OpenStreetMap data because there are things that are just not going to replicate, or things that could be improved working with community and smart ways to improve OpenStreetMap. The systems that Overture is setting up or the structures that Overture is setting up is designed to work with OpenStreetMap data, then improving OpenStreetMap is a shared goal of OpenStreetMap and Overture.

Where there is a risk is I think is more on the perception in the long term because if Overture becomes kind of like the point where open geographic data is produced and distributed for use in

products then OSM is kind of just left as a footnote then there could be a trouble because, like I was saying earlier, we rely on expanding awareness in order to attract more people and to continue to develop the community.

So I think the biggest challenge that Overture -- it's not like it wasn't a challenge before Overture -- what Overture highlights for OpenStreetMap is we need to communicate better, we need to operate more effectively, we need to be sustainable. So all the things we need to do come in sharp relief because of OSM would be lesser known and that would mean a sort of decline. But regardless of whether Overture is there, we need to become more -- we need to work on how we're claiming our status on the world stage of what OpenStreetMap is about. So in that way I think it's a good thing because I think it's sort of like provokes the thinking of what does OSM need to be.

**Interviewer**

But do you think that communication would be enough not to be overshadowed by Overture?

**Interviewee**

I do, actually. Because my belief, and maybe sometimes it's weird to have beliefs in terms of technical approaches but my belief is that while there's a lot of interesting things you can do with more automated approaches to creating and bringing geospatial data together, I do not think we are -- I think there's a perception that we are much closer to where we could automate the map than we are. I think that, especially when you consider what are commercial interests in maps and what are societal interests in maps, those have great overlap in terms of the kinds of features that are important, but they don't completely overlap by any means. So we know, like the auto industry is a very big driver of the geospatial industry but if you are entirely reliant on a commercially, even if it's an open ecosystem, then there is certainly more economic pressure to just focus on car experience, like cars on maps. I've seen this like it is harder to build an economic case around mapping bicycle infrastructure or pedestrian infrastructure, and that's just one thing.

And so I think it's vitally important that there's a map which represent everyone's interests, and then everyone can use and contribute to. Because if it is solely a commercial proposition, then it is going to ultimately -- it's not a criticism, this is just how it is -- it's ultimately going to follow what is commercially viable and that's just going to be a smaller, whatever it is, it's going to be a smaller slice of what societal concerns are.

**Interviewer**

In the few minutes that I have, I wanna ask about Esri because I'm also doing a case study of Esri. How does Esri affect OSM, especially in terms of the reuse of OSM data?

**Interviewee**

It's a good question because Esri has been, I have to say, Esri has been really great. They have done a lot of good work to raise awareness of OpenStreetMap among their one of core customer bases, the public sector, and have also made it easy and expected to share data in a way that could be available for OpenStreetMap and thinking about how to build that connection, and then also making available products that rely on OpenStreetMap. So I think they've done a lot of incredible work.

But what I'm not sure about or is unclear to me is that to what extent has Esri customer base started to use OpenStreetMap themselves. I know there's a lot of benefit and I see a lot of activity driven by

Esri but how often is it used by Esri customers. I actually don't know. I'd be very curious to understand that more.

**Interviewer**

Sounds good in general, but do you have anything that you perceive as less than ideal impacts of Esri towards OSM?

**Interviewee**

No, I mean, the main things that's been of concern with corporate activities in OpenStreetMap has largely been around organized editing. I used to work at <redacted> and we developed that concept. And most all of organized editing actually is fairly well done but there's certainly, you put that many resources in an organized way, it can have a lopsided effect on the map, and if there's a problem with how that organized editing is conducted, it can have a bigger impact area. So Esri has not done that, they don't do organizing themselves and that's been the main place where there's been, I think, a conflicts or issues that have arisen. Those companies are part of the OpenStreetMap community, they are part of it but that's where, within the community, there's been troubles. But I have not seen that [i.e., troubles] come up with Esri and to be honest, there hasn't been a lot of, from my perspective, detrimental effect. I guess the only thing I'd like is for Esri to do more. There's barely any complaint. I think we could -- we've been talking about this, but there's a whole lot more that Esri and OpenStreetMap could do together.

**Interviewer**

Do you have some time for just one more question?

**Interviewee**

Sure.

**Interviewer**

For those who want to build a nonprofit community based open data, that is based on crowdsourcing and crowdfunding, what would be the key lessons that you would share with them?

**Interviewee**

Critical thing for growth and sustainability is a diversity of interests and a diversity of the kinds of entities that are involved. Just as a total different analogy: in a city where there's many different kinds of entities, institutions and real communities, you can sense that, in places where there are like planned capitals -- I mean, I've never been to Brasilia, I'm sure it's a great city, but I also hear Rio de Janeiro, there's a vibrancy and a life that comes when things are brought together and where there is room for lots of different kinds of actors and lots of different kinds of interests. And I think with OpenStreetMap, that was natural because we're mapping the world and that involves just about everything.

I think the challenge with other open data projects, if they want to take a community approach or if they're like -- I've also seen this with different citizens and science projects -- how do you do that where -- if you're reliant on the core entity to create that community, you're really fighting something uphill. If you see there's shared interests among many different entities and find something that would attract them to be a part of it, then it is much more sustainable, also because just like talking basically about resources and funding, entities come and entities go and so you want to have, if you need to keep something going in the future, and it could not just be money, could just

be interest in the project, you need to have like an ecosystem, you need to have very different species and so if there's some change, then some other species could become dominant. If you just have a monoculture, then a disease could come in and totally wipe out that that area. So what's good for ecological and agricultural practice is also good for developing open data communities.

**Interviewer**

Ok. Thank you so much. I'm gonna stop the recording now.