**Transcript: Minutes 14-27:59**

[Dr. Pennington]

If you think about it, that’s sort of what pixels, you give it resolutions. You have to know what the resolution is on the instrument.

[Dr. Gates]

So, its instrument dependent.

[Dr. Pennington]

Is instrument dependent.

[Dr. Gates]

The regularity of the micro seconds?

[Dr. Pennington]

If you mind it could be might be microseconds. It could be measuring every ten minutes. It could be measuring once per day, with some interval associated.

[Dr. Gates]

So, when you talk about footprint, what would you all like to know about footprint is? No view, not a catch? You gotta dig.

[Student]

For each different sensor, would we be able to access from the individual sensor data? How big is the footprint according to the data of the actual, ah, I guess area that is recording? Or do we actually have to go out and find ourselves?

[Dr. Pennington]

Well so there’s two different questions there. One is that there is an inherit resolution set, that is determined by the instrument itself, and there’s also things that the scientist can modify. So an instrument could be capable of measuring every microsecond. But I might only have it measuring one an hour. And, so there’s two different footprints.

[Dr. Gates]

How do you know the location?

[Dr. Pennington]

Well there, you know the location, again, I mean let’s go back to the camera again. I will have a sort of GPS reading about the location, and there is an error associated with that GPS reading. So I will really know where, and the error accuracy. Then I also know because of the …there’s gonna be nformation, data about the instrument. And what it’s special resolution is. Uhm, that also has an error associated with it. And other things that happen, so for instance when you are measuring wnviromenal things like humidity or temperature, those sort of things, and you have a footprint of, let’s say 10 kilometers. But you got wind, and wind impacts that measurement. So its not necesarely those 10 meters. And now it is shifted and it is no longer on the center of the footprint. So, oh you are not necessarly measuring evenly around that footprint area. Now, our peer, has done a lot of research, we got mathematical models, and has trying to understand the footprints. But then not everybody has that, in fact that is one of the areas where we doesn’t able the contribution of this group. Most people are not taking that into consideration. And so that, properties that we might be interested and be able to specify which footprints are different then what the calibration states.

[Student]

Will we be keeping track of the changing footprints?

[Dr. Pennington]

Ah, well let’s just say that today could be used that way. I could envision that we could design properties that could alert us, when let’s say some wind condition happened, so we know footprints are changing. So yeah I can see our groups developing properties that will alert you about changes. You look like you had a question.

[Student]

So there any algorithm that could place and check certain speed, humidity? Or an integer changes. Will you be able to tell a footprint about those measurements or do we have to go there personally?

[Dr. Pennington]

No, you can mathematically.

[Dr. Gates]

Any other questions before we move on? Sunlight, daylight… If you think about it, the camera its only facial accuracy is only correct good at what we call natal. Which is the very center of the image. As soon as you go away from it, you are looking and the camera sensors are looking in an angle which introduces distortion and error and someone can even correct for that if you know lots of things. But it can also, a satellite image is going through clouds and with the radiation is actually, refracted. So it’s part of the metadata? It preccion and accuracy are of the metadata?

[Dr. Pennington]

Sometimes you can calculate in correct form.

[Student] Just a quick question, is it of any sort of importance to visualize where the sensor are like in a map.

[Dr. Pennington]

Absolutely.

[Student] Does the system do that right now?

[Dr. Gates]

No, no. It doesn’t. It could be, I mean, we know you can generate a map but the system is not doing that right now.

[Student]

Every sensor has its fixed location anywhere so you can just grab it and get it.

[Dr. Pennington]

You could certainly put it in a map and maybe overlay information about anomalies that are being stated. Is there to do that, but it’s not dong that right now.

[Dr. Gates]

Ok so now am gonna go and mention the sensor’s data. So what kind of sensors is being used?

[Dr. Pennington]

Well you know there is a wide variety that we use. Temperatre, Moisture, and any of those can me measured at any height above the ground. In case you are intersed in that, but those are the common ones. C02, levels of CO2 in the air. And just any chemical, property that is out in the environment, there is a sensor to measure it. Absolutely. I’m thinking just scoping right now and the easier it was, And we can calculate with satellite and the area photographs for oil, of anything for space…

[Dr. Gates]

I’m thinking to scoop more

[Dr. Pennington]

So he measure in all sorts of levels…So you have…

[Dr. Gates]

They are creating a data dictionary.

[Dr. Pennington]

So uhm, light comes in from the sun. It gets split, and it has different kinds of wavelengths. It comes in all sorts of ways. It reflects in different ways depending on the composition of the s… it did. So you are all rightif you have wavelngths. Radars are important. Radars for example. In particular, but special tool sallow to see. So we might take a picture, we only get certain, the sides go away. With this notation we can measure these other wavelengths.

[Dr. Gates]

Questions? So we have the data sensors. Are the data formats, do these sensors have. Different data formats, let’s say within,temperature…?

[Dr. Pennington]

Yes

[Dr. Gates]

Is there documentation that you can see to use this format? Will that be given to the teams?

[Dr. Pennington]

Usually, there is information provider by a vendor. It depends on the instrument. And this is a commercial industry where each has…So there can be several data formats. In most cases what you want to do is take those proprietary formats and turn them into something more standard. Like some sort of binary format. I think you should assume that this is a tool that you are not gonna try more than one for every. A certain format is expected.

[Dr. Gates]

There is a header file. You will know more about that. What is stored. What types of problems should we anticipate when the system describes several types of formats. Are there any problems we can anticipate due to that.

[Dr. Pennington]

I think I just answered. I mean yeah if you want to get it in a certain type of format.

[Dr. Gates]

And so this question: Does the system should be able to define new file anomalies. Now we talk a little bit and about the assumption that we are gonna make.

[Dr. Pennington]

I mean there always new sensors and they change. The history of satellite data format is in constant change. And obviously in order to use our system, we need to kick in the data in some sort of common format I assume is going to be fine by our system. So ultimately, yes there will be a lot of work for somebody to be able to use this system to get expertise at the system.

[Dr. Gates]

Now we are going to agree that we are going to do a simulation. You are not gonna be working with the actual instrument for immediate data, so we will be creating files…