Group 00 Transcript

Test group, dry run

Both participants are male

Respondent	Text
	First recording 50:44
0:00:10.2 PERSON 1	So, yeah [pause] I would start with something about the context. That we have to determine who the users of the system are gonna be, stakeholders.
0:00:43.7 PERSON 2	Mhm yeah, they are students
0:00:48.8 PERSON 1	Yeah but it's, it's for students by students
0:00:55.2 PERSON 2	[inaudible]
0:00:56.4 PERSON 1	There's still the teacher and the stakeholder as well
0:00:58.6 PERSON 2	Yeah
0:00:59.3 PERSON 1	Because they're probably gonna get graded. Do we have to make assumptions about something for the teacher?
0:01:12.7 PERSON 2	[inaudible] She want them to learn from practice that--
0:01:31.9 PERSON 1	So it actually is basically if it works you get a pass. I guess. Right?
0:01:38.6 PERSON 2	No there are these requirements that need to be met
0:01:43.7 PERSON 1	Yeah well, if you follow the assignment and it works then you get a pass basically. Because you've shown-
0:01:48.8 PERSON 2	Well this lists elegance and clarity as a-. So what is meant by elegance and clarity is kind off an assumption of -
0:02:01.8 PERSON 1	Yeah that is true yeah, uhm
0:02:08.9 PERSON 2	Well
0:02:13.5 PERSON 1	Both in overall solution and envisioned implementation structure, but the envisioned implementation structure isn't really into context or

	functional view [laugh] so I guess elegance and clarity of the solution
0:02:31.0 PERSON 2	Yeah because I was thinking elegance and clarity that that's object-oriented design but that doesn't-
0:02:36.1 PERSON 1	No
0:02:36.9 PERSON 2	Apply to functional or context
0:02:41.2 PERSON 1	But still we can make an elegant functional viewpoint, split up responsibility and stuff
0:02:49.2 PERSON 2	Yeah
0:02:50.1 PERSON 1	We're going from context now I guess.
0:02:59.8 PERSON 2	Right, ok
0:03:02.5 PERSON 1	I'm not really sure when to play cards because it's a discussion
0:03:06.7 PERSON 2	Yeah
0:03:07.8 PERSON 1	[laugh]
0:03:11.5 PERSON 2	So, well let's look at constraints then. So what are the limitations maybe that gives us a good impression of what we can and cannot do. Oh, what do you mean with very simple
0:03:32.8 PERSON 1	Well the first thing I noticed about one of the constraints. Like, you should be able to create your own map, but it can only be four-way intersections. So, it's gonna be Manhattan anyway.
0:03:49.1 PERSON 2	Can it only be or—
0:03:50.3 PERSON 1	Yeah, all intersections will be four-ways, there are not T-intersections nor one-way roads. It says here
0:03:56.7 PERSON 2	Oh ja
0:03:57.4 PERSON 1	So, which in the end means you're just kind of allowing them-
0:04:00.8 PERSON 2	Let me, put down the constraint card. [looks through cards] Oh what is it- It's a constraint. Alright. So alright, all intersections are four-ways, so you don't have to come up with alternative intersections. An intersection is a simple thing.

0:04:29.2 PERSON 1	Yeah. And all intersections should have traffic lights, it says. So-
0:04:37.9 PERSON 2	No stoplights or passes or anything else? So really simple intersection. So the only difference that there exists is really- Oh no, I read that wrong. Accommodate left hand turns protected by left hand green arrow lights. It's not driving on the left, it's turning left.
0:05:04.7 PERSON 1	I guess, yeah. I think that they're saying like turning left is uhm. Well, we're actually making an assumption. We thought cars- Nowhere states that how cars should drive, like if a car enters the map. Where does it go, what is the type of target to go to. It nowhere states should you just randomly generate an exit point in the map where you, the card wants to go and then have pathfinding and it starts to get complicated for a simple traffic light simulator.
0:05:53.6 PERSON 2	Yeah, well you could always just do a random-
0:05:56.6 PERSON 1	Random left, right
0:05:57.6 PERSON 2	Yeah, randomization at each intersection. True. And you can just switch on new cars into the system, but other ones- Or you can make a closed system where if they disappear off one side of the map they appear on the other side. You have a fixed number of cars in the system.
0:06:16.4 PERSON 1	True. But that doesn't really simulate traffic flow if you make-
0:06:20.6 PERSON 2	No
0:06:21.1 PERSON 1	A crappy intersection with like, one second of bringing them and then [inaudible], and one second of bringing them and two hours-
0:06:26.5 PERSON 2	Yeah, so let's not do that then.
0:06:28.5 PERSON 1	Yeah
0:06:29.3 PERSON 2	So, is that a trade-off. I think so.
0:06:36.0 PERSON 1	Yeah, performance versus, I don't know, functionality. Like, what you say, cars come out at the end of the map side is performance wise and, I don't know, easier to make but it is less functional. Because you can't see traffic flows that easy because, well there's fixed amount of cars so there's not really gonna be jams. Is there

	around Utrecht always the same amount of cars?
0:07:08.7 PERSON 2	Yeah, you kinda want to make that adjustable.
0:07:11.7 PERSON 1	Yeah.
0:07:12.1 PERSON 2	Kind of want to increase the spawning rate-
0:07:15.6 PERSON 1	Yeah yeah yeah yeah
0:07:16.0 PERSON 2	See if you get jams. You're gonna get jams eventually, but, and-
0:07:21.1 PERSON 1	It's at what point you're gonna get
0:07:22.0 PERSON 2	At what point that happens, so that might be something you'd want to be able to adjust.
0:07:28.6 PERSON 1	So yeah, ok. We're not really talking about this anymore I guess. Are we about to, no regret-
0:07:36.7 PERSON 2	No, that was functional. Uhm, ok.
0:07:55.1 PERSON 1	Say I am in my opinion the context is usually just who is gonna use the system and what other systems is the system gonna communicate with. And how does it fit into the problem space.
0:08:12.8 PERSON 2	Yeah
0:08:13.7 PERSON 1	And, well there isn't a big problem space yet. It's basically an assignment for students. There's only two kind of actors.
0:08:27.7 PERSON 2	System and the student.
0:08:29.3 PERSON 1	Yeah. Uh three, the system, the student and the teacher.
0:08:34.2 PERSON 2	Yeah
0:08:35.4 PERSON 1	And the student fulfills two roles, true, but still. There is not much context to go around in my opinion. This isn't [inaudible]. You should design the means by which the user creates a map, sets traffic time schemes and views traffic simulations. Ok. Not really sure.
0:09:14.7 PERSON 2	Yeah, I keep thinking about technical architecture and that stuff.
0:09:17.4	Yeah me too, especially when they talk about the means by which a

PERSON 1	user creates a map. Ok, so we need a user interface, we need-
0:09:25.8 PERSON 2	Yeah
0:09:26.8 PERSON 1	To store the maps somehow
0:09:28.0 PERSON 2	This description is really begging for design patterns and-
0:09:31.0 PERSON 1	Yeah
0:09:32.8 PERSON 2	But-
0:09:35.1 PERSON 1	But I- this what the context viewpoint says is not what I see as a context viewpoint. For me context is a lot more high-level and not really. You don't put in activity diagrams, which this sort of asks for. The means by which the user creates a map. So, I've seen activity diagrams, user starts map editor, adds maps, blablabla, saves the map, there's a map. But that's not context viewpoint for me.
0:10:06.6 PERSON 2	Yeah. I don't know
0:10:12.0 PERSON 1	So yeah. I think we can sort of draw a tree and model of the context view. How we see it.
0:10:19.5 PERSON 2	Mhm. Start with interfaces. Ok, this one [inaudible]. Multiple alternative approaches should be encouraged. What does that mean.
0:10:54.8 PERSON 1	Where?
0:10:56.6 PERSON 2	The fourth requirement
0:11:26.2 PERSON 1	Ok. I've no idea. Did you make- I guess I do have an idea, what they mean. So we're already gone from here actually. I'm not sure what we're talking about. I think they mean that you make alternative designs and pick the best candidate.
0:12:01.5 PERSON 2	Mhm
0:12:02.3 PERSON 1	Or actually we're at the problem now. Well this is actually the problem. So, yeah, which is always a good idea. Think of possibilities and pick the best one. Make multiple candidates for the design. Problem I have as a tactical- with a technical background is that the context and functional aspects are usually-
0:12:31.7	They don't have anything to do with-

PERSON 2	
0:12:33.2 PERSON 1	Nah, they're straightforward. It's the practical implications that warrant multiple interpretations and multiple models.
0:12:41.5 PERSON 2	Yeah
0:12:45.2 PERSON 1	So. Yeah. I mean the idea is we should make this design some way that we're used to. We should just draw some designs
0:12:54.2 PERSON 2	Yeah. Alright
0:12:55.6 PERSON 1	Ok.
0:12:56.5 PERSON 2	Shall we proceed to the whiteboard then
0:12:58.3 PERSON 1	Let's go. [inaudible]
0:13:02.4 PERSON 2	I'll put my phone near the whiteboard
0:13:18.9 PERSON 1	So which one, context or functional.
0:13:23.7 PERSON 2	We can start with context
0:13:25.9 PERSON 1	Yeah? [inaudible] Ok. So yeah, so basically that's a proper name [inaudible]
0:13:52.8 PERSON 2	[laugh] Traffic tycoon.
0:14:03.9 PERSON 1	So, basically a traffic tycoon. Now we have-
0:14:08.5 PERSON 2	Yeah so, if we call it a viewpoint you mean the design needs to create a map, sense traffic timing schemes and view traffic simulations.
0:14:20.1 PERSON 1	Yeah
0:14:21.2 PERSON 2	[inaudible]
0:14:21.4 PERSON 1	No, [laugh] well it smells really chemical so sort of worried
0:14:29.9 PERSON 2	Ok. So the means by which you create a map.
0:14:39.0 PERSON 1	Well, for example. I mean, for me that's part of the functional. The point-

0:14:44.3 PERSON 2	Yeah it's on the context so-
0:14:47.3 PERSON 1	Well, as long as it's in the design why don't we call it functional instead of context
0:14:52.6 PERSON 2	So you what you kind of want is the use of a kind of simple map editor
0:14:52.6 PERSON 1	Yeah
0:14:57.0 PERSON 2	The simple intersections, simple traffic lights. Those are things you want to be able to add through a map editor
0:15:11.2 PERSON 1	And then, we have a set of actions. Save map, open map, add intersection, roads
0:15:34.7 PERSON 2	Yeah, road. Intersection, add traffic lights
0:15:42.3 PERSON 1	Well, all intersection should have traffic lights so it's
0:15:44.9 PERSON 2	Yeah
0:15:45.2 PERSON 1	It's, you don't have to specifically add a traffic light because if you have
0:15:51.4 PERSON 2	They need-
0:15:52.3 PERSON 1	An intersection there is always gonna be a traffic light because it's a constraint of the system. Alright. And on the technical side it's gonna be a real pain to remove one intersection you're gonna have to remove a lot more because there are only four-ways allowed and if you remove one intersection then-
0:16:16.7 PERSON 2	Then this road is going nowhere.
0:16:18.7 PERSON 1	You can't actually remove intersections in the middle because then the heel, entire grid falls apart
0:16:26.4 PERSON 2	Alright, so that's a reason why you can't have the open edge figuratively appear on the other side of the map. Because that would make it impossible to remove any intersections
0:16:38.8 PERSON 1	What?
0:16:39.4 PERSON 2	The thing is that like, if you have cars disappearing of one side of the map-
0:16:42.1	Mhm

PERSON 1	
0:16:42.3 PERSON 2	And then appear in the other. I you do that then you wouldn't be able to remove any intersections.
0:16:47.1 PERSON 1	So. You wouldn't be able to remove any intersection. I mean-
0:16:50.9 PERSON 2	Cause then there's no edge really so then you wouldn't, so that's-
0:16:53.3 PERSON 1	If I-
0:16:53.7 PERSON 2	Definitely not do that
0:16:54.3 PERSON 1	This grid, and I remove this one-
0:16:56.4 PERSON 2	Yeah
0:16:56.9 PERSON 1	Which means these roads basically go nowhere Which isn't allowed and these are no longer intersections. So basically-
0:17:03.7 PERSON 2	Everything is beh
0:17:05.3 PERSON 1	Everything is beh.
0:17:06.7 PERSON 2	Ok so. Yeah
0:17:11.5 PERSON 1	So the only thing you can do is add more. This design decides how big you want to make, how many intersections and how much space between each intersection
0:17:25.0 PERSON 2	Yeah, so essentially it's always a grid of a certain size. You control the size of it.
0:17:30.3 PERSON 1	Yeah you can control this and how many there are.
0:17:33.4 PERSON 2	So, it's a number of nodes and the lengths of the road. Is there anything else we could play around with?
0:17:44.0 PERSON 1	So it is a section
0:17:44.7 PERSON 2	Different arrangements of intersections
0:17:51.6 PERSON 1	There is- no not really
0:17:53.2	Unless you can put them on an angle while still being four-ways

PERSON 2	
0:18:01.2 PERSON 1	Yeah true, but when you get crap everywhere [laugh]. I mean it could still work
0:18:07.8 PERSON 2	Yeah but-
0:18:10.0 PERSON 1	But what does it add compared to this one
0:18:11.2 PERSON 2	Yeah does the simulation change in any ways. I mean that's kind of an abstraction of this, so. We can definitely do this, you'll make things slightly more difficult because intersections where different roads, a la V-shape come together. That becomes hardly more problematic. So it definitely does change the flow of traffic.
0:18:32.4 PERSON 1	Yeah, but it should be simple, not scientifically correct.
0:18:35.9 PERSON 2	Yeah
0:18:36.3 PERSON 1	So it should be a simple where you can see what changes, if you change traffic light timings
0:18:42.1 PERSON 2	So, we are talking about a trade-off. Are we talking about a problem or context you think
0:18:52.4 PERSON 1	Uhm, both. Cause context is the fact that it shouldn't be scientific and problem because we're actually having a problem we're trying to solve, the problem of how, how we're gonna. What can you do in the editor. I'm not really sure what to call it.
0:19:14.3 PERSON 2	I'm gonna call it problem.
0:19:15.5 PERSON 1	Sure. Decide number of x y intersections. So, how many intersections and roads length. Yeah, between intersections
0:19:59.4 PERSON 2	I mean you can [inaudible] like this heh. Move this [inaudible], you have intersections there, there and there
0:20:06.9 PERSON 1	Yeah, so the map shouldn't be square
0:20:08.3 PERSON 2	Doesn't have to be square no.
0:20:09.7 PERSON 1	No. So yeah
0:20:13.7 PERSON 2	Well
0:20:14.7	That's. Yeah that's true. We made an assumption that the map should

PERSON 1	be square. And that's not true
0:20:24.5 PERSON 2	[inaudible]
0:20:25.6 PERSON 1	We just solved an assumption. I'm not really sure
0:20:31.7 PERSON 2	Well I'm gonna write yours down then. That's square. Let me [inaudible]
0:21:01.1 PERSON 1	Yeah true
0:21:06.5 PERSON 2	Ok. Yeah obviously there's a few really functional thinks going on here. Open, saving and it's saying [inaudible] that sort of thing. Undoing, redoing that sort of thing but-
0:21:06.5 PERSON 1	Not really necessary that much
0:21:22.4 PERSON 2	Yeah, that's what I think. Uhm, yeah that's the map itself
0:21:32.7 PERSON 1	Yeah
0:21:33.3 PERSON 2	When you're running a simulation you also want to control traffic
0:21:39.7 PERSON 1	Yeah, but this was the use case on there, which had like couple things, design the map, right?
0:21:46.7 PERSON 2	Oh yeah
0:21:48.6 PERSON 1	Creates a map, set traffic time schemes, that we still have to do. And use traffic simulations, so I'm setting the timings, I guess should also, well are we gonna have a separate map editor even
0:22:08.3 PERSON 2	[inaudible] not part of our system?
0:22:10.3 PERSON 1	Well, that you have a map editor and a simulator separate as applications, close to the technical side
0:22:17.1 PERSON 2	No, I don't see why it's not complicated enough to divide it into the applications
0:22:23.1 PERSON 1	Yeah, I'm not either. So yeah ok, so we have to be able to change the timings or it could also be on sensors or red somewhere. So you have to be able to put a sensor, like, here's the sensor for this traffic light
0:22:40.5 PERSON 2	Ok yeah, so add sensor would be it then, a piece of functionality

0:22:52.8 PERSON 1	For traffic lights. And run simulation basically. We also have to be able to change the inflow of cars. How many card come out in here on the side
0:23:19.1 PERSON 2	Yeah.
0:23:20.4 PERSON 1	So, sets, yeah, car influx
0:23:41.2 PERSON 2	We're talking about a context trade-off. If you can only control the set amount of influx from any side of this sort of random distribution, I think that is going to be less interesting than when you can say something like, this road is frequently traveled.
0:24:03.2 PERSON 1	Mhm
0:24:04.0 PERSON 2	So yeah, we kind of want to keep this simple but I think if you make it completely random then it's too simple, not useful
0:24:11.8 PERSON 1	Yeah
0:24:12.3 PERSON 2	So setting it per road, I think is something we want
0:24:15.0 PERSON 1	Yeah, that was also one of the constraints I believe
0:24:17.8 PERSON 2	Was it?
0:24:18.7 PERSON 1	Yeah, I think, somewhere. I believe I read it. Yeah, I can't seem to find it. Well. It's a good point anyway, I can't find it
0:25:34.7 PERSON 2	So who needs to set, be able to set influx per, per edge I would say. Well it's the edge, but not edge as in nodes and edges, but edge of the map.
0:25:47.2 PERSON 1	[inaudible] so yeah
0:25:57.9 PERSON 2	And then we have here able to adjust the timing schemes.
0:26:02.2 PERSON 1	Yeah yeah yeah
0:26:04.3 PERSON 2	We got the sensors but-
0:26:09.7 PERSON 1	Yeah well, always with. I was thinking, you can eh, so I was thinking making the assumption that if there is a sensor there is no timing scheme.

0:26:22.6 PERSON 2	But this [inaudible] control has timing scheme
0:26:26.1 PERSON 1	Yeah, but I mean they can work either on sensors-
0:26:31.7 PERSON 2	Or just add a timer
0:26:32.5 PERSON 1	Or just add a timer and-
0:26:34.3 PERSON 2	Yeah then you get into the situation that people are waiting for no one
0:26:37.2 PERSON 1	Yeah
0:26:37.9 PERSON 2	But, but still-
0:26:40.4 PERSON 1	Well they should be able to simulate traffic and it still happens, believe me, so yeah. Add sensor, remove sensor-
0:26:53.2 PERSON 2	So I would say you add a timing scheme per intersection. And add schemes for an entire intersection. So, you kind of want a scheme editor. You can call an intersection and then you can control, pop-up comes, pop-up yes
0:27:23.0 PERSON 1	So timing scheme and set, whatever. Add traffic light timings if no sensor
0:27:45.6 PERSON 2	Well I think the existence of a sensor kind of-
0:27:50.5 PERSON 1	Negates this but we still have to write down its, if there's no sensor. I mean, we can make it a standard case but I mean, its different timings and how long does it stay green. And this is, let's say, well it's, yeah ok it's a reboot
0:28:09.1 PERSON 2	It's to do with the timing so, the timers gets going unless the sensor is reboot
0:28:16.0 PERSON 1	Yeah true
0:28:17.5 PERSON 2	He comes from this side and if isn't ever triggered, it stays on red.
0:28:21.7 PERSON 1	Yeah, true. Can be input, the sensors
0:28:25.0 PERSON 2	Or randomly or whatever. So-
0:28:28.2	What else would be fun, random traffic lights

PERSON 1	
0:28:31.4 PERSON 2	Like it skips a few possibilities and then it goes on green
0:28:34.2 PERSON 1	Mhm
0:28:35.0 PERSON 2	Communication sensor is broken or something.
0:28:40.4 PERSON 1	So basically these are all functionalities the program should have in the end
0:28:44.9 PERSON 2	Mhm
0:28:46.7 PERSON 1	Should go in functional
0:28:48.4 PERSON 2	Yeah
0:28:51.0 PERSON 1	Ok, so yeah, do we have to make a picture of this. Nah, this was really important for a 3d model
0:28:59.0 PERSON 2	This is not a model
0:29:00.6 PERSON 1	So, I'm gonna, so we have room to actually draw a model in. So I would say, let's try to put this into a functional view then
0:29:18.5 PERSON 2	Ok
0:29:19.1 PERSON 1	Because, unless you have more to add to this
0:29:25.5 PERSON 2	Not really
0:29:28.1 Instructor	I just wanted to say, it's been half an hour
0:29:30.8 PERSON 1	Ok yeah. So were gonna try to make a solution I guess. Well, for the functional aspect
0:29:45.2 PERSON 2	Yeah, how do you wanna go about doing it. Draw a FAM or-
0:29:53.9 PERSON 1	Yeah well, that's the simplest way of- I mean what is a FAM, a FAM is really just boxes and arrows so, let's just draw boxes and arrows and its always a FAM so basically-
0:30:06.6 PERSON 2	So, one main thing I would say is the map editor. So editing map as well as a functional block I would say
0:30:19.7	Yeah well, I was thinking that as well, but I'm also with [NAME]

PERSON 1	looking at that architecture tool now and basically, it's so closely related because 90% of the actions that you do. Because were in simulation [inaudible], is the only one here not doing it in an editor. And you're always fine tuning all the settings to see what happens and run another simulation. So to really split that up-
0:30:51.2 PERSON 2	Mhm
0:30:51.7 PERSON 1	I mean on the functional level, true, there is a difference between editing and running but-
0:30:57.4 PERSON 2	Well we can make that into two giant blocks
0:31:00.2 PERSON 1	Yeah well, I'm thinking too technical. You're [inaudible] because splitting it up at the technical level is-
0:31:08.1 PERSON 2	Right so, if we can just do something like, really big, which is-
0:31:14.1 PERSON 1	Editor
0:31:18.8 PERSON 2	Editor, and the something which isn't in the actual runner
0:31:31.5 PERSON 1	You've already taken back your card I guess
0:31:34.5 PERSON 2	Yeah
0:31:48.9 PERSON 1	Well what kind of. So we have actual intersection designs, actual editor as map design as function, I guess
0:31:58.5 PERSON 2	Yeah
0:32:06.4 PERSON 1	Timing schemes, editor. Timing schemes is-
0:32:12.5 PERSON 2	Timing schema
0:32:14.7 PERSON 1	Schema
0:32:17.0 PERSON 2	[inaudible]
0:32:18.0 PERSON 1	Yeah, so we actually have this one. Well the editor itself catches those two
0:32:29.1 PERSON 2	Mhm

0:32:29.8 PERSON 1	I guess. This is map design, this is map design. The centers, do we call it map design?
0:32:36.4 PERSON 2	I would say so yes
0:32:37.7 PERSON 1	Ok. So these two ook, the influx per X roads
0:32:42.2 PERSON 2	Maybe that's a part of the simulation already
0:32:43.6 PERSON 1	Yeah
0:32:44.0 PERSON 2	Because you want to adjust that while doing a simulation. Not beforehand
0:32:48.9 PERSON 1	Yeah
0:32:49.9 PERSON 2	So [inaudible]
0:32:59.3 PERSON 1	Yeah, I wasn't sure how to call it
0:33:01.6 PERSON 2	I know they need to be verbs or [inaudible]
0:33:04.3 PERSON 1	Yeah
0:33:06.1 PERSON 2	[inaudible] Right so the editor, I mean this is kind of where you [inaudible] what the user needs to do but, there is a functional part of it which is the opening and the saving and that sort of thing. So really this, what do you call that, storage
0:33:24.6 PERSON 1	Yeah, that's called storage. Here we are still missing actual running of the simulation, so
0:33:37.4 PERSON 2	[inaudible] so right
0:33:45.9 PERSON 1	Yeah, so if we actually want to make a flow of this we actually have to draw information flows from functional aspects to other
0:33:53.9 PERSON 2	Yeah. So I think one of them is quite obvious right, that's these two. So, this, from this influx design do you
0:34:07.4 PERSON 1	Yeah, it flows both ways, so yeah, it sort of would tell them what type the current schema is, and the change schema from the pop-up comes back
0:34:18.6 PERSON 2	With the timing it only knows about the single intersections I would say. So, the only thing it would need to know is whether it's a sensor

	or not
0:34:33.1 PERSON 1	Yeah
0:34:35.2 PERSON 2	Cause that changes the schema, the he just-
0:34:40.3 PERSON 1	Gets back the added values of new timings or whatever
0:34:45.3 PERSON 2	I just call it scheme
0:34:46.9 PERSON 1	Scheme
0:34:48.0 PERSON 2	And, and he has to be able to sense-
0:34:53.1 PERSON 1	Yeah
0:34:53.5 PERSON 2	A map
0:34:54.9 PERSON 1	Save, load basically
0:34:57.1 PERSON 2	Yeah that's what I mean
0:34:58.7 PERSON 1	Yeah but this is better. So then we also have the runner, so basically can we, can we-
0:35:09.8 PERSON 2	From storage
0:35:11.0 PERSON 1	With storage I guess, well that, that assumes that it's a different window because this, this if we say it gets the data from storage then we're basically saying it's not in the map designer. That we run the actual- So then, we have two interfaces, that's-
0:35:31.3 PERSON 2	I think that's reasonable, also I think you can also store everything before running anyway
0:35:37.3 PERSON 1	Yeah yeah true
0:35:38.0 PERSON 2	You kind of have to instantiate a few things. So-
0:35:41.0 PERSON 1	True, it was an assumption about-
0:35:45.2 PERSON 2	Yeah

0:35:45.5 PERSON 1	If we brought it arrow down
0:35:48.1 PERSON 2	So, from storage to running or can we just say that, or just tell the editor to run it
0:36:00.3 PERSON 1	I would say from storage to running, right. And between these two because while running or I mean then you can change the input. Which was sort of what we were saying
0:36:18.0 PERSON 2	Yeah. So. So you spell use
0:36:45.9 PERSON 1	Yeah, not really sure how to call it
0:36:52.0 PERSON 2	Yeah
0:36:53.8 PERSON 1	Not really any information
0:36:57.7 PERSON 2	Yeah, not really no. Well you need to know-
0:37:02.1 PERSON 1	What the current value is or something like that
0:37:04.0 PERSON 2	Yeah, I mean, at least you have something like this
0:37:07.8 PERSON 1	Yeah, well, is it changing one road? This thing. So, does it get one, like I want to change it into this road and then you can set values. But that's really a stupid model, you just type in one number
0:37:22.5 PERSON 2	Yeah well maybe in the influx you kind of want to be able to adjust all of them. So just changing a few numbers, maybe you want to change a general number as well. It's just a random distribution.
0:37:36.3 PERSON 1	So it's more like an editor then. For the timer
0:37:41.1 PERSON 2	Yeah that's very simple but it's, how do you call it, influx editor
0:37:45.0 PERSON 1	Yeah alright
0:37:46.3 PERSON 2	But it's just adjusting numbers. There is definitely a random number generator involved here. But that's an external library
0:37:55.1 PERSON 1	Yeah that's also-
0:37:56.1 PERSON 2	It's not really functional

0:37:56.8 PERSON 1	Implementation
0:37:57.6 PERSON 2	Yeah. So do we need to look at the UI, as a functional aspect
0:38:07.6 PERSON 1	Let's see what they say about functional. Functional elements and their responsibilities, so we actually drew those I guess, which, this on the side, we should maybe map it or something. These are-
0:38:29.0 PERSON 2	Yeah
0:38:29.9 PERSON 1	User stories we can actually map to these things
0:38:32.7 PERSON 2	Mhm, but we have nothing that's really visual there like that
0:38:37.4 PERSON 1	No. true, this is all functional, right, this kind of-
0:38:43.2 PERSON 2	Yeah but, is visual functional. This is a bit of a- you know, you want to inform the user what's going on-
0:38:53.0 PERSON 1	Yeah but-
0:38:53.5 PERSON 2	Through visual, so that's kind of a functional element as well
0:38:58.4 PERSON 1	Interfaces and primary interactions. Not all interfaces can be interpreted as a UI I guess
0:39:05.5 PERSON 2	Yeah [inaudible] probably gonna be very complicated.
0:39:39.5 PERSON 1	Well I was basically thinking of a one screen with a map, basically for the editor, and also for the runners. So the same basis. And the difference is that here you can double click on schemes and drag and drop intersections to make more space between them and well, stuff like that. Double-click and typing value, stuff like that
0:40:03.4 PERSON 2	So do you just want to say this?
0:40:08.1 PERSON 1	They both use the same run yeah
0:40:11.7 PERSON 2	Yep, different windows with the same runners
0:40:15.5 PERSON 1	Yeah yeah. But you wanted to actually draw the UI or just put it on the module
0:40:24.7	No just, remember that it's part of the functional

PERSON 2	
0:40:28.7 PERSON 1	Oh yeah
0:40:29.5 PERSON 2	Ok then.
0:40:35.6 PERSON 1	[inaudible]
0:40:39.1 PERSON 2	User uses the UI, not necessarily this
0:40:52.0 PERSON 1	Awesome work
0:40:55.5 PERSON 2	Alright
0:40:58.6 PERSON 1	So yeah
0:41:01.3 PERSON 2	Let's see if there's any requirements that need to-
0:41:09.9 PERSON 1	I'm gonna make a picture, I think
0:41:13.3 PERSON 2	Mhm
0:41:39.1 PERSON 1	Um, yeah I'll take a picture, cause I think this is a nice model, functional model
0:41:46.3 PERSON 2	Mhm. Just checking if we haven't forgotten anything
0:41:57.9 PERSON 1	So yeah, I was thinking what kind of decisions did we make
0:42:03.5 PERSON 2	Well we haven't made any decisions about how to depict traffic flow
0:42:07.7 PERSON 1	No true, so. Yeah but I was thinking did we make any decisions here, because it's about decision making. This experiment. And, well basically we split the UI from other parts because that's always the case nowadays because it's [inaudible] to split responsibilities
0:42:30.9 PERSON 2	O-O [object-oriented] design really
0:42:31.9 PERSON 1	Yeah exactly, so, that's our OO influence. And then we said, well and editor does something significantly different then the simulator, the runner
0:42:44.8	This is kind of a model-view-controller pattern

PERSON 2	
0:42:46.1 PERSON 1	Yeah, it is. Because, well, I guess, because we use it constantly all the time we automatically go back to it. But it's also a solution that's so general that it can be applied to basically anything that the user uses
0:43:04.8 PERSON 2	Yeah
0:43:05.5 PERSON 1	You make a view. The role of the controller, you always work with data and you always do something with the data. So the model and the controller is always there. The view is, depends where it's at. Usually a program oriented service
0:43:18.7 PERSON 2	Yes, I mean, we picture it technical as a technical architecture but
0:43:22.3 PERSON 1	Yeah
0:43:22.9 PERSON 2	But, yeah
0:43:24.4 PERSON 1	It can still be applied to functional as well. Functional architecture usually is, in the end, implemented like, this is gonna be a module, that's gonna be a module, that's gonna be a module, this is gonna be a namespace, so-
0:43:37.9 PERSON 2	Yeah. Alright, so, um, yeah in the running here that's where any sort of traffic flow things need to be depicted
0:43:57.4 PERSON 1	Yeah. Well the depicting is happening here-
0:44:00.6 PERSON 2	Well, they have an actual visual
0:44:01.6 PERSON 1	So, so here it's just we have give back some abstraction of where-
0:44:07.2 PERSON 2	Number of cars
0:44:08.1 PERSON 1	Number of cars but, there, what do we want. Do we want to have instances of specific cars, like, single cars? Or do we want to have stupid numbers, so. I have a road, let's say here are ten, and then we have the [inaudible] cars moving at 50 kilometers an hour. We put here timing and it say well, I'm going, I'm green for 5 seconds, and the five seconds, I don't know, three cars can transfer. So this goes to seven and then we write down here three. So this is the most basic presentation, the other one is actually that we're gonna draw cars and

	then move the cars
0:44:56.3 PERSON 2	Yeah
0:44:57.4 PERSON 1	So
0:44:59.4 PERSON 2	Well, if you have [inaudible] in between you can have [inaudible] cars that does, that get going and slowly stop or you can just shift dots around. That, that's sort of the in-between thing
0:45:11.9 PERSON 1	Yeah, and also the problem with this is, I mean, just having a number on the line does not allow for different road sides basically. You have to know whether it's always-
0:45:24.0 PERSON 2	You have to take one, so something with road sides, because we want to know if there's too many cars on a specific road. It starts gridlocking-
0:45:31.1 PERSON 1	If it's full then people can't pass overhead
0:45:35.1 PERSON 2	Yeah and you get a gridlock here, and then in this traffic can't move anyone, so you kind of want to simulate this kind of thing otherwise-
0:45:42.4 PERSON 1	Yes. So this is too simple
0:45:44.5 PERSON 2	Yeah
0:45:45.4 PERSON 1	So we're already talking about a solution to the problem, I guess
0:45:52.2 PERSON 2	Right, write that down. Problem.
0:46:05.1 PERSON 1	And we're three quarters an hour going, so if we want we can get some coffee or something. [inaudible] cold coffee
0:46:14.9 PERSON 2	Are we talking about a constraint, risk, trade-off?
0:46:22.9 PERSON 1	I don't know. It's not really a constraint so, the risk thing I guess, I mean, is it a constraint yes, [inaudible] simple numbers is a constraint so we want to have actual cars so, but
0:46:38.3 PERSON 2	Okay
0:46:38.8 PERSON 1	Yeah, it's constraining in its functionality. It's not really constraint on its entire system
0:46:44.4 PERSON 2	Well it does mean that you want to do something here, with a road length, number of cars

0:46:53.2 PERSON 1	Yeah so, you're actually going, technical implementation to a game engine with a game loop
0:46:58.6 PERSON 2	Yes
0:46:59.7 PERSON 1	Which is gonna do a tick every, I don't know, six, six ticks a second, something like that, pick a number and every tick it moves cars. Speeds them up or not whatever
0:47:11.4 PERSON 2	Yeah
0:47:13.1 PERSON 1	So basically, there's gonna be a game engine here
0:47:24.8 PERSON 2	Yeah
0:47:25.9 PERSON 1	Specifically the game loop
0:47:28.3 PERSON 2	Yeah
0:47:29.2 PERSON 1	That's about [inaudible]
0:47:35.4 PERSON 2	Yeah aright
0:47:37.4 PERSON 1	But that's technical
0:47:40.5 PERSON 2	How it actually works is technical
0:47:42.2 PERSON 1	Yeah yeah. Well, the fact that we need a game engine isn't really- so it is this sort of, adds also to the context. Then we interface with an existing interface I guess
0:47:59.9 PERSON 2	Yeah
0:47:59.9 PERSON 1	There's enough free ones so
0:48:02.8 PERSON 2	I mean, this is so simple that it doesn't have a module somewhere
0:48:07.2 PERSON 1	Yeah
0:48:08.0 PERSON 2	But, yeah, anything else functional that we forgot. Sensor, UI map is in here, road length, UI map design
0:48:35.0	So, we sort of decided within the discussion back, a few little time

PERSON 1	ago, that we want to simulate individual cars
0:48:47.1 PERSON 2	Yes
0:48:53.0 PERSON 1	Not really a decision, no it's sort of a decision so. We reached a conclusion
0:48:58.9 PERSON 2	We didn't want to simulate, not necessarily visualize but at least have them in the simulation. However they look on the screen doesn't really matter
0:49:08.0 PERSON 1	No no no, simulate is, simulate is not visual-
0:49:10.3 PERSON 2	Yeah
0:49:10.3 PERSON 1	Visualize
0:49:12.3 PERSON 2	Right, because otherwise road length is very very limited in its use. Because, road length has to do also with gridlocking and if it's just about the time it takes to get from one intersection to the other then that's so basic that it's almost [inaudible]. Because in any city gridlocking is a real problem
0:49:38.3 PERSON 1	Mhm. But yeah, you're right, we have to know when a road is full. So, then stuff starts locking up.
0:49:49.2 PERSON 2	Yeah. That's why you want to simulate the individual cars. [inaudible] yeah, I think we found all the functional
0:50:08.5 PERSON 1	Yeah?
0:50:39.1 PERSON 2	Alright, shall we have a coffee break
0:50:41.6 PERSON 1	Yeah
	Second recording 0:15 seconds
0:00:01.7 PERSON 1	So yeah
0:00:02.4 PERSON 2	Recording
0:00:04.1 PERSON 1	Do we have to do anything with this
0:00:06.6 PERSON 2	Have you taken a picture of it yet?
0:00:08.7	No, with these-

PERSON 1	
0:00:10.0 PERSON 2	I'll just take another one
0:00:11.9 PERSON 1	[inaudible] not really [inaudible]
	Third recording 43:54
0:00:00.6 PERSON 1	So we can rub this out?
0:00:01.2 PERSON 2	I have to start recording
0:00:04.4 PERSON 1	Ok so, is this [inaudible] can we put this one away.
0:00:07.7 PERSON 2	Yeah
0:00:07.9 PERSON 1	I think this one is complete so. So yeah, context? I guess?
0:00:22.2 PERSON 2	Yeah
0:00:24.2 PERSON 1	So, my interpretation of context during the software architecture course is, like I said, how does it relate to other things, same domain, so whether it be users or other systems. But since it's such a simple system you're not really gonna have a lot of relations to other entities. So we have the-
0:00:51.9 PERSON 2	You just, mean that you can make some design decisions here that aren't actually mentioned but are, operating systems, [inaudible], that sort of thing but, Windows, Java.
0:01:11.4 PERSON 1	It said something like, you can assume that externals have a [inaudible] package for all the chances and random generators
0:01:19.9 PERSON 2	Well there's not really a lot of statistics involved, there's just a random number generator.
0:01:25.1 PERSON 1	But also, like, the effort speed with the current scheme or how well the throughput is, I don't know, there's some mod involved at least. You could assume, external
0:01:42.2 PERSON 2	Well actually, you mentioned there something. The speed at which cars move.
0:01:48.0 PERSON 1	Yeah?
0:01:49.0 PERSON 2	It's not really mutual.

0:01:53.4 PERSON 1	Well, if there's a-
0:01:55.4 PERSON 2	Well, that's something you might want to play around with.
0:01:57.3 PERSON 1	Yeah, but I mean the- I was meaning the average speed, a car either stands still or drives a maximum speed. But you can still calculate the effort by taking, let's say, the distance traveled versus the time.
0:02:13.4 PERSON 2	Yeah
0:02:13.8 PERSON 1	So I was thinking like that, but true you could change the speed. But the point is that they want to simulate traffic flows based on basically only traffic timing.
0:02:25.7 PERSON 2	Yeah, so they're all travelling as fast as they can.
0:02:28.7 PERSON 1	So, to make the experiment easier you take out all the other variables, you put them on a constant and you only change one variable.
0:02:37.0 PERSON 2	Yeah. Yeah ok. So, simplicity, for the sake of simplicity you say- it doesn't really design [inaudible]
0:03:19.8 PERSON 1	Well, it designs architecture. The idea is that, of the assignment as I read it, is that they design the architecture and they then should be able to build it but for us the end-result is not building but just, this step. But they should be able to
0:03:38.0 PERSON 2	Yeah, nah, that's fine
0:03:46.1 PERSON 1	So this is basically all external-
0:03:50.2 PERSON 2	Yeah, unless the person who actually uses it to study traffic-
0:03:57.0 PERSON 1	Well, that's also-
0:03:58.0 PERSON 2	Also students, yeah
0:04:05.3 PERSON 1	So, build, design, use
0:04:08.6 PERSON 2	Design, do
0:04:09.6 PERSON 1	Uh yeah. So yeah, is this, in my opinion what a context view usually looks like.
0:04:20.9	Yeah, that reminds me context uses whatever actors you want to put

PERSON 2	in the- with [inaudible] windows and arrows. I mean-
0:04:30.8 Instructor	Maybe if you're done with this [name] was also thinking about adding an information viewpoint. Maybe that's good for the technical side of the design to go to.
0:04:43.5 PERSON 1	It is more technical yeah
0:04:47.8 Instructor	Should be maybe-
0:04:48.2 PERSON 1	Just this figure
0:04:48.5 Instructor	Add an information viewpoint because you still have half an hour left
0:04:53.0 PERSON 2	Well, shall I take another picture of this one then
0:04:54.9 PERSON 1	[inaudible]
0:04:56.5 PERSON 2	Maybe yours doesn't, stop recording
0:04:58.6 PERSON 1	Yeah, doesn't. At least, it didn't look like it.[inaudible]
0:05:18.5 PERSON 2	So in terms of information
0:05:24.7 Instructor	Here, shall I show you the information viewpoint
0:05:28.4 PERSON 2	Well, I know what it is but-
0:05:30.2 Instructor	Describes the way the system stores, manipulates, manages and distributes information. Information structure and content. [inaudible] a bit more of a technical I think
0:05:41.8 PERSON 2	Yeah we can, you wanna try, try doing, or you could try an ER diagram first, it's still kind of technical, and then a business process-
0:05:56.1 PERSON 1	Yeah
0:05:58.5 PERSON 2	Model, that's, kind of what I would do with a-
0:06:01.9 PERSON 1	Yeah, I will also do stuff, like, the map is basically a graph
0:06:06.7 PERSON 2	Yeah

0:06:07.3 PERSON 1	Stuff like that, so, draw, like a, that's what we're doing with the capita selecta as well. We're trying to define what are nodes in the graph, what sort of properties do they have, what should at least be stored, how do they relate to each other. So, how do they communicate. [inaudible] which are basically roads but they also have a length which you should take into account.
0:06:32.1 PERSON 2	Shall we start with the ER diagram as well
0:06:34.3 PERSON 1	Yeah sure. Can we do this?
0:06:36.9 PERSON 2	I don't think so right
0:06:37.6 PERSON 1	Yeah [inaudible]
0:06:43.0 PERSON 2	So we'll just start off with a map
0:06:48.4 PERSON 1	Yeah. Which contains
0:06:53.8 PERSON 2	A map has-
0:06:53.8 PERSON 1	Intersections
0:06:57.0 PERSON 2	I don't remember the different kind of arrows
0:06:59.7 Instructor	Did you look at the picture that you made?
0:07:02.4 PERSON 1	Nah, it's more like the, whether we should use this arrow or we should use this arrow
0:07:08.9 Instructor	Oh ok
0:07:12.5 PERSON 2	But so, a map
0:07:16.6 PERSON 1	That's more important, contains
0:07:18.0 PERSON 2	Contains. Eh, should be at least six right?
0:07:24.5 PERSON 1	Yeah, so six, six to N?
0:07:30.1	Six to N

PERSON 2	
0:07:30.4 PERSON 1	One map
0:07:31.0 PERSON 2	And only one
0:07:37.5 PERSON 1	So
0:07:37.9 PERSON 2	The intersection had traffic lights
0:07:41.5 PERSON 1	Yeah
0:07:43.3 PERSON 2	So, shall I say contains again or have
0:07:49.6 PERSON 1	Four, always four
0:07:50.9 PERSON 2	Or, no not four. They each have the same traffic lights right?
0:07:53.8 PERSON 1	Yeah
0:07:54.8 PERSON 2	Well, not four
0:07:54.9 PERSON 1	Oh no but, you can, oh yeah so there are twelve, cause you can go-
0:07:58.8 PERSON 2	Fifty-three, yeah
0:07:59.9 PERSON 1	Left, straight and right
0:08:01.3 PERSON 2	So, each intersection contains twelve and [inaudible] intersection. Traffic light. Then sensors, are not necessarily there
0:08:27.3 PERSON 1	Nope
0:08:28.8 PERSON 2	So, always right contains a few but, sensor
0:08:37.3 PERSON 1	Well, the point is the sensor belongs to a point on the roads, and it has a relation to an intersection because it's related to a traffic light. But is it really related to the- or not, I mean, do-
0:08:53.7 PERSON 2	Yeah
0:08:54.1	We're making the assumption now

PERSON 1	
0:08:55.3 PERSON 2	Yeah
0:08:55.7 PERSON 1	That a sensor works for all three lights if you drive in that direction but a sensor can also just work for-
0:09:03.3 PERSON 2	I agree
0:09:03.6 PERSON 1	One intersection
0:09:03.6 PERSON 2	One sensor applies to a traffic light alright?
0:09:07.6 PERSON 1	Yeah. To at least one. One, two, three
0:09:11.6 PERSON 2	Well perhaps all three, yeah
0:09:13.2 PERSON 1	Well yeah, that's an assumption we now make. Yeah.
0:09:19.6 PERSON 2	So a sensor belongs to. [inaudible]
0:09:28.2 PERSON 1	Just to mix it up
0:09:29.0 PERSON 2	Yeah. The sensor belongs to-
0:09:31.6 PERSON 1	Three traffic lights is what you were saying
0:09:34.0 PERSON 2	Wait a second, one, two, three
0:09:34.0 PERSON 1	Yeah, that's what I was suggesting.
0:09:38.1 PERSON 2	Yeah
0:09:38.7 PERSON 1	Because, I mean-
0:09:40.3 PERSON 2	I'd have one traffic light going to the right, or it's all three
0:09:45.2 PERSON 1	I mean if there are three lanes then we can have a sensor for each traffic light, because this one is going to the left, this one goes straight and this one goes to the right. But, this is visualization and assumes multiple lanes

0:09:58.3 PERSON 2	Also, if, this might be split into another two lanes and there would maybe be two traffic lights but that does, we don't really care about that
0:10:05.1 PERSON 1	Nah but-
0:10:06.3 PERSON 2	I'd see that as one factor
0:10:08.0 PERSON 1	Yeah
0:10:08.9 PERSON 2	So-
0:10:11.8 PERSON 1	Well and another thing is, I mean, it's an assumption we're making right now, because if we have a road, it going in that direction, [inaudible], if you go here there can still be three traffic lights. One for-
0:10:29.4 PERSON 2	Yeah
0:10:30.1 PERSON 1	And this also influences how we are going to simulate stuff.
0:10:34.3 PERSON 2	Yeah. Yeah, so, lanes and traffic lights are not mapped one to one.
0:10:41.2 PERSON 1	Yeah well, we have to make a decision about how we are going to do this. Are students gonna be able, are we as users gonna be able to define whether lanes and which traffic lights maps to which lanes and stuff, or are we just gonna assume that it's- I mean this means that if the car wants to go straight, but this light goes green, [inaudible], this car wants to
0:11:11.1 PERSON 2	Right. Write down
0:11:12.4 PERSON 1	[inaudible] simulate stuff
0:11:13.9 PERSON 2	That we're doing a, assumption then
0:11:18.4 PERSON 1	Yeah. Assumption, which is basically a problem, I guess. The assumption we're making is a problem
0:11:29.6 PERSON 2	Mhm. So, what is your answer to the assumption.
0:11:40.9 PERSON 1	Solution? To the problem-

0:11:42.2 PERSON 2	Yeah
0:11:42.4 PERSON 1	Of this assumption. Well, it's a simulation so it, and it doesn't have to be perfect, so we could say that if this light turns, this car goes. Either, if there is car in there. But as soon as a car is inline, we can say if the light goes it can go. But, that's not really true, because this sort of, I don't know, creates traffic problems. If there's too little throughput for the cars then there's actually, that is gonna hinder the traffic flow-
0:12:20.2 PERSON 2	Yeah
0:12:20.2 PERSON 1	And that is what we want to simulate. So, the stupid solution is not a good one, I would say. I would say that, when you're designing roads, so this is actually gonna be the first road
0:12:31.8 PERSON 2	Yeah
0:12:32.2 PERSON 1	You actually have to define how much lanes does, on a certain road
0:12:36.0 PERSON 2	Yeah
0:12:38.0 PERSON 1	And, actually. So then the next question is, well we could always say, there's always three lanes, basically. That's a solution, always one traffic light for each lane and that's easier implementation then [inaudible]
0:12:38.0 PERSON 2	[inaudible] yeah [inaudible]
0:12:57.6 PERSON 1	And it also means that if the straight ahead is full, that the left and right still can drive and this one just checks that I go to the other side.
0:13:07.8 PERSON 2	Yeah. And that does make it a lot simpler, so-
0:13:10.5 PERSON 1	This makes it a lot simpler than letting students define their own lanes. So I would say we got to this one-
0:13:16.3 PERSON 2	Yeah
0:13:16.5 PERSON 1	And then there's always a one to one between sensor and the traffic light, so. And this is [inaudible] okay
0:13:28.7 PERSON 2	Okay
0:13:29.3	So we're done taking about this assumption I guess

PERSON 1	
0:13:32.6 PERSON 2	Yeah
0:13:39.7 PERSON 1	And I can wipe out this
0:13:45.3 PERSON 2	Anything else that should be in the map [inaudible] map or something else
0:13:50.6 PERSON 1	Roads.
0:13:53.2 PERSON 2	Roads
0:13:54.4 PERSON 1	But roads relate to traffic lights and sensors, and intersections basically. It's the interconnectivity
0:14:03.5 PERSON 2	So each road has a traffic light, do you mean like that?
0:14:09.0 PERSON 1	Well, each road has three lanes and that lane has a traffic light, how are we gonna define lanes as a separate element in, it's
0:14:19.0 PERSON 2	[inaudible] want to edit lane [inaudible] entity
0:14:26.9 PERSON 1	Well car has to pick a direction and you have to, you can make a road or a lane. So, there's actually a lane in-between
0:14:35.5 PERSON 2	Is this a lane?
0:14:37.0 PERSON 1	Yeah. Well, at least we know what it is, that's what matters
0:14:41.6 PERSON 2	So, a road has always three lanes?
0:14:44.9 PERSON 1	Yeah
0:14:47.0 PERSON 2	That's a road going in one direction right?
0:14:48.6 PERSON 1	Yeah, so six lanes towards
0:14:50.7 PERSON 2	Yeah. And each lane is part of one. Each lane has one traffic light and each traffic light has -
0:15:04.6 PERSON 1	And yeah. So, how do we want to relate these two here. I mean, we're basically defining relations now
0:15:04.6 PERSON 2	Eight roads per intersection? How's that

0:15:23.2 PERSON 1	Eight roads, ok, sure
0:15:25.6 PERSON 2	Just, back and forth yeah?
0:15:28.8 PERSON 1	Yeah
0:15:31.3 PERSON 2	So an intersection has eight, a road-
0:15:36.3 PERSON 1	Has one, no has two intersections because we define a road as three lanes. So it has a, it starts and it ends
0:15:45.4 PERSON 2	Yeah exactly
0:15:46.2 PERSON 1	This one [inaudible]
0:15:47.4 PERSON 2	Well, unless it's an edge.
0:15:51.7 PERSON 1	True that is doesn't have, that it has at least one. So yeah. Ok. So a map has, there were six intersections, at least, but yeah you don't know how to define what's the least, whatever. You can calculate what the least amount is but, I mean, six intersections is kinda
0:16:28.1 PERSON 2	Yeah
0:16:28.9 PERSON 1	Can be, like, really stupid. If you want to make six intersections out of straight lines and then you have a different amount of them, if you make a [inaudible] grid.
0:16:39.1 PERSON 2	Yeah
0:16:40.3 PERSON 1	So, I'm not really into-
0:16:41.4 PERSON 2	I don't really care about how many that is
0:16:43.9 PERSON 1	[laugh] so that's why it's question mark [inaudible]
0:16:51.4 PERSON 2	[inaudible] we've got to move unless we've got cars. So a map has a certain amount of cars, a car is on a particular lane
0:17:11.8 PERSON 1	It's always on a lane
0:17:14.2 PERSON 2	Yeah so

0:17:15.6 PERSON 1	Well, it can also be an intersection but-
0:17:19.0 PERSON 2	Yeah but we only need to simulate, that's real driving [inaudible] so a map has N cars-
0:17:29.4 PERSON 1	A map, that's not-
0:17:31.3 PERSON 2	Oh wait. One. And a car has one lane, is on one lane. And the lane [inaudible]
0:17:31.3 PERSON 1	Yeah. Well, now we have another thing. Scheme, [inaudible] scheme or traffic light scheme it's, we tied it to an intersection in the functional structure
0:17:59.9 PERSON 2	Yeah
0:18:00.3 PERSON 1	So um-
0:18:01.5 PERSON 2	Each intersection has
0:18:06.2 PERSON 1	One on one
0:18:07.0 PERSON 2	One scheme
0:18:08.6 PERSON 1	And the scheme needs to know about sensors. I can assume, well this relation sort of implies enough. So yeah, I mean, like this relation there's like. It's starting to become a [inaudible], we're trying to define every relation.
0:18:28.8 PERSON 2	Yeah. Sensor has [inaudible] a scheme [inaudible]
0:18:43.5 PERSON 1	That's because this is a one on one, this is one on twelve, that's also one as well.
0:18:50.3 PERSON 2	And [inaudible]
0:19:07.9 PERSON 1	What else do we have. Eight roads, should we define like a source and a sink? Like source and a sink can be a type of intersection , like a, or the edge. You know what I mean with source and sink?
0:19:25.7 PERSON 2	Oh yeah. You just do an edge node , that's something you have, and that can be. What is it
0:19:34.7 PERSON 1	Yeah, well, it's automatically valid depending on which way the cars run but-
0:19:43.3	It is always both, yeah so-

PERSON 2	
0:19:45.3 PERSON 1	So, we, it's always a two-way road and-
0:19:48.6 PERSON 2	Yeah
0:19:50.2 PERSON 1	[inaudible] it's just basically, an edge zone is
0:19:53.7 PERSON 2	Is a source slash sink
0:19:56.2 PERSON 1	Yeah
0:19:56.8 PERSON 2	So, well a map has at least-
0:20:03.6 PERSON 1	Yeah and it's the same as this
0:20:04.4 PERSON 2	I don't know, is something a magical number
0:20:06.9 PERSON 1	Yeah [laugh]
0:20:10.2 PERSON 2	Yeah?
0:20:13.8 PERSON 1	So yeah, this is basically the complete information scheme. A quick picture. So now I think we should be starting to wipe out certain lines because
0:20:26.6 PERSON 2	Mhm
0:20:28.0 PERSON 1	Some stuff is difficult
0:20:31.7 PERSON 2	Yeah [inaudible]
0:20:33.9 PERSON 1	Yeah
0:20:40.4 PERSON 2	What do you want to move to next
0:20:42.5 PERSON 1	Well, the fact, down there, with schemes and traffic lights and sensors and intersections and stuff would, I mean, what do we, what's the model now. Do we want to model how you would implement it? Or, I mean, this is

0:20:58.0 PERSON 2	Information flows I would say [inaudible] or something. I mean it's a pretty clear from the functional architecture [inaudible]
0:21:11.5 PERSON 1	Yeah
0:21:11.6 PERSON 2	And the map flows from [inaudible] to the other without a technical architecture it's kind of meaningless
0:21:11.6 PERSON 1	Yeah. I mean all these contains, I mean, basically this is domain data type which contains a lot of smart entities. This is a simulation only thing, and this is all editor work. Even, this one is also simulation. So these two, basically simulation
0:21:40.6 PERSON 2	Well we can do some allocation to functional [inaudible] is all we can say and this has to do with the influx-
0:21:52.6 PERSON 1	Mhm
0:21:52.9 PERSON 2	Editor. [inaudible] this has to do with the runner
0:22:04.0 PERSON 1	Yeah and then the big square behind
0:22:07.4 PERSON 2	And the rest is map, no-
0:22:15.1 PERSON 1	We actually had a separate scheme edit something
0:22:17.2 PERSON 2	Oh yeah
0:22:19.0 PERSON 1	Right and separate storage thing, but that's not in here. Because basically the entire thing goes into the storage.
0:22:31.6 PERSON 2	Right so, this is one map editor
0:22:36.4 PERSON 1	Yeah [inaudible]
0:22:40.0 PERSON 2	Hm?
0:22:40.5 PERSON 1	Yeah
0:22:42.2 PERSON 2	This must be [inaudible]. What do we call it? Scheme editor?
0:22:46.7 PERSON 1	Scheme, scheme editor or something like that. That's intentional?
0:22:57.5	Yeah, couldn't remember if it was with an E or an A. yeah alright

PERSON 2	
0:23:07.1 PERSON 1	So this is a nice allocation [inaudible] yeah. Yeah, so, yeah this is a nice allocation to the functional architecture I guess. By which information contains, contain or [inaudible]
0:23:51.8 PERSON 2	Mhm
0:23:52.7 PERSON 1	Well, the entire thing is used in the real [inaudible] of course as well. But is this unique data to the runner, does this-
0:23:59.5 PERSON 2	Yeah
0:23:59.9 PERSON 1	An option you need for the influx editor [inaudible] I mean
0:24:06.1 PERSON 2	Yeah. Yeah two things use each other and then maybe allocation goes to both.
0:24:13.6 PERSON 1	Yeah
0:24:13.8 PERSON 2	And that's always a bit of a concern but doesn't really matter. Anything else, what do, want to go through process next, maybe? There's very little process to talk about.
0:24:27.8 PERSON 1	Yeah well, the thing I was concerning about, the functional we drew before is we could also have done a FAM scenario. Like the-
0:24:36.9 PERSON 2	Yeah
0:24:38.0 PERSON 1	[inaudible] like if a user now wants to add a traffic thing then he can, like that but still there's not too many arrows because it's a such a simple system that you're gonna have like, three of four arrows. Yeah. So do we want to do that or do, what kind of process did you have in mind?
0:24:58.0 PERSON 2	Yeah well, without a technical architecture you can't really talk about [inaudible] or anything like that so, what kind of data types, I mean, [inaudible]
0:25:09.2 PERSON 1	Mhm
0:25:10.2 PERSON 2	So, yeah if we want to do one process maybe. Just the stuff we need so it won't [inaudible] immediately clear usually in the functional architecture. From map editor, the map flows to-
0:25:25.7 PERSON 1	There the names are so self-explanatory that you don't really have to draw a scenario in there. So, well, the information we defined now, which is nice.

0:25:37.7 PERSON 2	So you want to go deeper into the runner then, what happens in there.
0:25:40.9 PERSON 1	Yeah
0:25:41.7 PERSON 2	[inaudible] into it, but take them apart from graphical representation
0:25:48.8 PERSON 1	Yeah , yeah true, the runner. So what kind of processes go on in the runner, what kind of modules are there.
0:25:57.0 PERSON 2	That's everything in the runner
0:26:05.5 PERSON 1	So basically what has to happen is, it has to load a map
0:26:19.8 PERSON 2	So-
0:26:22.4 PERSON 1	I'm just gonna apply [inaudible] to it then [inaudible] road map, which contains all the schema's and the real thing. It has to be able to, the influx is that stored in the map? It's a question about information we store. I mean when is it stored, every time we run a simulation? Do we have to, it resets to a standardized random distribution blablabla. Because currently, in the current information thing we had, we didn't store the influx, we had this node, do we store the influx in there? Like this one produces this map blablabla? I mean-
0:27:16.6 PERSON 2	Kinda, I think, yeah. Want it to be random but [inaudible] that's stored in the influx.
0:27:27.7 PERSON 1	Yeah yeah but we can define the influx as an expert, wait a second-
0:27:37.2 PERSON 2	Yeah
0:27:37.8 PERSON 1	It's not like I-
0:27:38.5 PERSON 2	[inaudible]
0:27:39.1 PERSON 1	And then, you still have the runner in this and you can still sort of tell that [inaudible] and if you want a certain amount [inaudible]
0:27:53.7 PERSON 2	Yeah
0:27:55.3 PERSON 1	Well the point is currently we have the- with the influx and the runner split, but this part is actually editor because, I mean, it's really

	something we store in a map persee, so-
0:28:22.3 PERSON 2	Yeah
0:28:22.3 PERSON 1	if we put it in here then we also have to do this, see.
0:28:28.9 PERSON 2	Yeah but, I mean, you didn't store it in the map itself, but it's something you might want to play around with while, asking you to find a map, you might want to play around with different approaches
0:28:38.8 PERSON 1	True
0:28:39.5 PERSON 2	So you see when your map breaks down, how much traffic it would take. So, that's kind of why we had it in separate parts in the functional architecture.
0:28:48.1 PERSON 1	Ok sure.
0:28:49.5 PERSON 2	So I want to say it's part of the map.
0:28:53.0 PERSON 1	Well-
0:28:53.8 PERSON 2	[inaudible] some way but it-
0:28:56.1 PERSON 1	Well, it's stored in the map right? If we want to store it. Because it's dependent on the edge node, and the edge node-
0:29:02.9 PERSON 2	Yeah
0:29:03.2 PERSON 1	Are stored in the map so, so if you want to, you actually have to do this. So then, also we have set influx, is something that [inaudible] in here.
0:29:18.3 PERSON 2	So, this is functional right?
0:29:22.9 PERSON 1	Whatever we want
0:29:25.2 PERSON 2	So, we got an influx [inaudible]
0:29:30.3 PERSON 1	Yeah
0:29:32.2 PERSON 2	We've got some map loading and saving thing, map storage. Right
0:29:48.9	Yeah

PERSON 1	
0:29:52.8 PERSON 2	[inaudible] so, we we're think of- might using a game engine to do the running
0:30:05.1 PERSON 1	Yeah, so there's like some loop that it gets repeat
0:30:10.2 PERSON 2	So we could call that, like, a big chunk of this. It's really game engine, and yeah you would take this of some open source thing but-
0:30:22.0 PERSON 1	And then in there is the game loop I guess, and then we can write down some steps of that happening again, in a sort of combined-
0:30:29.3 PERSON 2	Yeah
0:30:29.4 PERSON 1	Functional architecture process
0:30:31.3 PERSON 2	Because the car has to go from intersection to intersection, sort of update the traffic
0:30:36.8 PERSON 1	Yeah
0:30:37.5 PERSON 2	Each lane.
0:30:40.3 PERSON 1	Problem. Which intersection happens first. I mean, the stuff has to move to open up a road.
0:30:47.9 PERSON 2	Very good point
0:30:52.5 PERSON 1	Once you [inaudible] it's actually kind of a big problem. So order of execution-
0:31:03.3 PERSON 2	It's a trade-off I feel.
0:31:06.3 PERSON 1	Yeah
0:31:07.6 PERSON 2	So which, which intersection goes first
0:31:14.9 PERSON 1	We can do it stupid like, they have numbers from left to right and then it's a grid and you can always like give the numbers like that and then start with number one, or start with number-
0:31:25.0 PERSON 2	Well it's one timer right? So at some point, one of them-
0:31:31.0 PERSON 1	Yeah
0:31:31.7	But it is set off [inaudible] what is the gain time when you start the

PERSON 2	simulation. They all have different timers but what are they set to when you start. I don't want to wait a minute, or two minutes, yeah, but what time is it now.
0:31:47.9 PERSON 1	Yeah yeah but my problem is if those- that's no problem, that's just ticks because you can translate the timing, someone says one minute and I say ok, so there's, I don't know, ten ticks a second, so then they have-
0:32:01.5 PERSON 2	Yeah yeah. No no, I don't mean keep track of it, just, to start the simulation every other times everywhere, but all the time is- have been counting down for a set amount of time already
0:32:17.2 PERSON 1	Mhm
0:32:18.3 PERSON 2	So there's a sort of relative timer from one intersection to the other.
0:32:23.2 PERSON 1	Yeah
0:32:25.3 PERSON 2	Yeah. Otherwise you'll never get a green wave you know.
0:32:28.7 PERSON 1	Yeah yeah but that's up to the students to develop with their traffic system.
0:32:35.9 PERSON 2	Yeah
0:32:36.7 PERSON 1	I mean they can put in sensors with exact tier, that if you draw a, this-
0:32:40.9 PERSON 2	Yeah yeah, you can make an assumption that all timers are- they are waiting for different amounts of time but they're all set to zero and the simulation starts-
0:32:53.5 PERSON 1	Yeah well-
0:32:54.0 PERSON 2	Cause there's really only about the relative differences, not about the absolute time
0:32:59.2 PERSON 1	Well the, if people want I can see that in the timing scheme they can just add a starting tier [inaudible] thingy, that's just one [inaudible] because it's only starting value saved. The traffic lights usually waits two minutes and you want it to already start at one. Let's say one minute down, then only at the start it waits one minute and then it goes green and waits two minutes-
0:33:21.6 PERSON 2	Yeah [inaudible]

0:33:23.0 PERSON 1	That's not the problem, the problem I saw is, you have them-intersection, and let's say we can define traffic lights for all directions. But this one, you define them all but in the same [inaudible] this one and this one and this one and this one all can drive, which car drives first. Because the one that wants to turn left here for instance, needs that this lane is empty. But, I mean, they can drive here but what happens first. This one wants to take a turn and it can't because it's not ready here, but it's actually the same moment.
0:34:03.5 PERSON 2	Mhm
0:34:03.7 PERSON 1	So, what happens first. And we can do it stupid, let's say, drivers aren't perfect so this one is slow to react, reaction, that's why he can't take a turn and so it just, like I said this one is one, this one is number two as well, this one is number three, this one is number four, this is number five, we just go down, like, we handle each intersection in order, and if that happens. So you make this the worst and that's too bad, it's a simulation it's not real life. So how do I handle this. This one, this lane has to drive before this one can make a turn, so basically what now happens is, this one drives and the next tick this one can actually move.
0:34:48.4 PERSON 2	Yeah. Yeah.
0:34:53.0 PERSON 1	I think that's the best solution, you just go for the stupid approach because it remains a simulation.
0:34:58.6 PERSON 2	Well, the alternative, with counts you just mark them away.
0:35:02.5 PERSON 1	Fancy algorithms that, let's say-
0:35:08.0 PERSON 2	Well if you haven't, yeah, yeah, only if you've got a kind of intelligent traffic system that knows through all the sensors how much traffic there is anywhere.
0:35:16.0 PERSON 1	Yeah
0:35:16.7 PERSON 2	But that's too fancy?
0:35:17.6 PERSON 1	Yeah well it needs at least three iterations because you basically have to move
0:35:21.9 PERSON 2	Yeah

0:35:22.8 PERSON 1	And then have to check whether some space has come free and you can move again
0:35:28.3 PERSON 2	That's a-
0:35:28.9 PERSON 1	It's a few iterations until you converge on the solution for that tick. Which is so much calculations that it's not worth a trade-off
0:35:38.9 PERSON 2	There is something you could do, but I think it's too fancy for a simulator. I think the sensors are purely to set off timers, and not to do intelligent traffic
0:35:51.3 PERSON 1	Yeah so the trade-off is non-realistic versus performance and complexity
0:35:57.2 PERSON 2	Yeah, this is the same case as before?
0:35:59.9 PERSON 1	Yeah trade-off usually are, between complexity and-
0:36:04.8 PERSON 2	So-
0:36:05.0 PERSON 1	[inaudible] ok, so yeah.
0:36:12.6 PERSON 2	Alright. So we got a loop that just goes through the intersection one by one, stupid thing.
0:36:24.5 PERSON 1	Yeah
0:36:27.8 PERSON 2	But if we [inaudible] intersection up, these timers are going off, well I suppose they're going right now. It just goes in a sort of fixed order
0:36:44.8 PERSON 1	Update [inaudible] with cars
0:37:06.5 PERSON 2	Mhm
0:37:07.3 PERSON 1	So this is basically something that we're gonna repeat for every intersection. Then we also have the sensors. They have to-
0:37:16.7 PERSON 2	Keep track of the timer.
0:37:18.0 PERSON 1	Well no, the timings is step one and then we go through all the cars and then we look- we don't look at an intersection where [inaudible] we get the car cause it's standing still in front of a green light so it can move. Alright. Cause this basically makes the light green.
0:37:38.2 PERSON 2	Yeah

0:37:38.9 PERSON 1	Because we also want to move cars in the lanes so you want to look through the cars anyway.
0:37:43.7 PERSON 2	Yeah
0:37:52.3 Instructor	I think it's about time
0:37:55.3 PERSON 2	Ok
0:37:55.7 Instructor	Five more minutes and then we round up for documentation.
0:38:01.8 PERSON 1	Go to course in order again? In order of the generation they all have a number, I guess, an ID and-
0:38:11.8 PERSON 2	Well you could go through the same order as you do the timers themselves and then go in order of them standing in front of that traffic light. That makes more sense, otherwise the car in front of him might prevent him from going.
0:38:23.9 PERSON 1	Yeah that's true. Ok so, but that means we have to handle driving cars on a lane. Different than standing still cars.
0:38:36.8 PERSON 2	Yeah
0:38:37.8 PERSON 1	Yeah well, that's no problem but [inaudible] cars and [inaudible] arrow [inaudible] cars.
0:38:48.7 PERSON 2	Mhm
0:38:49.9 PERSON 1	Basically. And this one is then, afterwards, we go through the [inaudible] order and move them, unless they just move. Or even if they just move. Because otherwise they might block. The lanes they're driving on.
0:39:09.2 PERSON 2	Yeah. Yeah [inaudible] I mean, unless of course that- not allow a grid lock. But I think that kind of is what we're meant to do so- you then have to go and check if there's a gridlock or something with cars are, if there's too many cars somewhere and they are blocking an intersection.
0:39:39.5 PERSON 1	Well basically you would want to check it, is there a car where I want to move, yes, well then I can't go there. And-
0:39:46.1 PERSON 2	Yeah ok. Now we want to see that nobody [inaudible] a grid lock, that's an assumption.
0:39:50.5 PERSON 1	Yeah yeah, but-

0:39:53.0 PERSON 2	I mean, it depends
0:39:55.6 PERSON 1	You really mean that if we have an intersection that, I mean, if this one is full, this one is full enough, three trucks, and that car wants to drive straight that it actually goes and stands here.
0:40:09.1 PERSON 2	Yeah that's what a gridlock is, because then these guys can't go
0:40:11.8 PERSON 1	Yeah
0:40:12.5 PERSON 2	So-
0:40:12.7 PERSON 1	But, but-
0:40:14.3 PERSON 2	It depends on the system whether you get that or not. Like here you don't see that so much, but in Manhattan that's the problem. Well-
0:40:20.9 PERSON 1	So- for busses it is, they always stop on the bus lanes. When I was still living-
0:40:26.2 PERSON 2	Oh yeah
0:40:29.5 PERSON 1	Or on tram lanes
0:40:32.0 PERSON 2	Still we-
0:40:32.1 PERSON 1	Yeah. I think this, this assumes that there's actually moving onto the intersection, we defined in the information view that a car is on a lane. And not on an intersection. And this means-
0:40:43.8 PERSON 2	Oh yeah
0:40:44.0 PERSON 1	That it's actually on an intersection.
0:40:47.6 PERSON 2	Yeah
0:40:47.6 PERSON 1	And it's blocking the entire intersection, I guess. Because- and it's really hard because to be honest we, I mean this brings a whole new set of problems with it if you want to do that
0:41:04.2 PERSON 2	Oh yeah that's a good point
0:41:05.2 PERSON 1	So, my assumption was that if this is full that he can't drive away from here because it's not allowed to stand on an intersection, which

	is actually the law. And-
0:41:17.5 PERSON 2	Fair enough
0:41:18.7 PERSON 1	That was my assumption
0:41:21.5 PERSON 2	We assume you know, good citizens.
0:41:25.7 PERSON 1	Yeah. So yeah
0:41:29.3 PERSON 2	I think it's a trade-off between complexity-
0:41:34.0 PERSON 1	Complexity and realism and actual-
0:41:39.1 PERSON 2	Yeah
0:41:39.6 PERSON 1	So yeah, go to the intersection, the timings with waiting cars go to the cars in order, car if on sensor spot timer, if it hasn't started yet. So yeah, I guess that was the game loop-
0:42:20.3 PERSON 2	Mhm
0:42:21.3 PERSON 1	Which keeps repeating. Oh and somewhere we have to add new cars, calculate the influx
0:42:29.1 PERSON 2	Yeah
0:42:30.2 PERSON 1	Do we do that at the end? Or at the start, so do we want those cars to even move further. I would say at the end, it doesn't really give a difference.
0:42:42.6 PERSON 2	As I had it at the beginning and end of the road. So it doesn't really matter.
0:42:49.7 PERSON 1	Generate new cars
0:42:52.5 PERSON 2	And remove all old ones
0:42:54.1 PERSON 1	Yeah
0:43:03.6 PERSON 2	Yeah
0:43:04.3 PERSON 1	So this is basically the process the game engine keeps going through. Yeah, until someone presses stop I guess.

0:43:17.5 PERSON 2	Yeah. Are we gonna go into the interface of running the simulation.
0:43:23.1 PERSON 1	Yeah
0:43:24.5 Instructor	Yeah, but you guys are already doing [inaudible]
0:43:29.0 PERSON 1	Ok, I guess this is-
0:43:29.7 Instructor	You still have the documentation to do
0:43:32.8 PERSON 1	Yeah yeah, we'll take the- or do we also need to record the documentation
0:43:50.9 Instructor	No, you don't have to do that.