Group 00 Transcript

Test group, dry run

Both participants are male

espondent	Text	Annotation
	First recording 50:44	
:00:10.2 ERSON 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.	**[1 issue]** What are the actors?
:00:43.7 ERSON 2	Mhm yeah, they are students	**[2 actor (AS?)]** Student
:00:48.8 ERSON 1	Yeah but it's, it's for students by students	
:00:55.2 ERSON 2	[inaudible]	
:00:56.4 ERSON 1	There's still the teacher and the stakeholder as well	**[3 actor (AS?)]** Teacher
:00:58.6 ERSON 2	Yeah	
:00:59.3 ERSON 1	Because they're probably gonna get graded. Do we have to make assumptions about something for the teacher?	**[4 issue]** What are the goals of Teacher?
:01:12.7 ERSON 2	[inaudible] She want them to learn from practice that--	**[5 softgoal (AS4)]** Teacher wants students to learn from practice
:01:31.9 ERSON 1	So it actually is basically if it works you get a pass. I guess. Right?	**[6 task (AS2)]** Teacher passes students if simulation is correct
:01:38.6 ERSON 2	No there are these requirements that need to be met	
:01:43.7 ERSON 1	Yeah well, if you follow the assignment and it works then you get a pass basically. Because you've shown-	
:01:48.8 ERSON 2	Well this lists elegance and clarity as a-. So what is meant by elegance and clarity is kind off an assumption of -	**[7 critical question CQ2 for 6]** Is task "pass students if simulation is correct" possible? **[8 answer to 7]:** No: the requirements list "elegance" and "clarity" for simulation, so it isn't possible to judge whether a simulation is correct or not. **[8a remove task 6]**

:02:01.8 ERSON 1	Yeah that is true yeah, uhm	
:02:08.9 ERSON 2	Well	
:02:13.5 ERSON 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	
:02:31.0 ERSON 2	Yeah because I was thinking elegance and clarity that that's object-oriented design but that doesn't-	
:02:36.1 ERSON 1	No	
:02:36.9 ERSON 2	Apply to functional or context	
:02:41.2 ERSON 1	But still we can make an elegant functional viewpoint, split up responsibility and stuff	
:02:49.2 ERSON 2	Yeah	
:02:50.1 ERSON 1	We're going from context now I guess.	
:02:59.8 ERSON 2	Right, ok	
:03:02.5 ERSON 1	I'm not really sure when to play cards because it's a discussion	
:03:06.7 ERSON 2	Yeah	
:03:07.8 ERSON 1	[laugh]	
:03:11.5 ERSON 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	
:03:32.8 ERSON 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.	**[9 task (AS2)]** Student has task "create map" **[*]** This element is later forgotten
:03:49.1 ERSON 2	Can it only be or—	
:03:50.3 ERSON 1	Yeah, all intersections will be four-ways, there are not T-intersections nor one-way roads. It says here	
:03:56.7 ERSON 2	Oh ja	
:03:57.4 ERSON 1	So, which in the end means you're just kind of allowing them-	
:04:00.8 ERSON 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.	

Time / Speaker	Transcript	Coding
:04:29.2 ERSON 1	Yeah. And all intersections should have traffic lights, it says. So-	
:04:37.9 ERSON 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.	
:05:04.7 ERSON 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.	
:05:53.6 ERSON 2	Yeah, well you could always just do a random-	
:05:56.6 ERSON 1	Random left, right	
:05:57.6 ERSON 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.	
:06:16.4 ERSON 1	True. But that doesn't really simulate traffic flow if you make-	
:06:20.6 ERSON 2	No	
:06:21.1 ERSON 1	A crappy intersection with like, one second of bringing them and then [inaudible], and one second of bringing them and two hours-	
:06:26.5 ERSON 2	Yeah, so let's not do that then.	
:06:28.5 ERSON 1	Yeah	
:06:29.3 ERSON 2	So, is that a trade-off. I think so.	
:06:36.0 ERSON 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?	**[10 tradeoff]:** **[10a softgoal (AS4)]** "dynamic simulation" to Simulator **[10b softgoal (AS4)]** "simple design" to Simulator **[10c task (AS2)]** "Generate cars" to Simulator **[10c task (AS2)]**

		"Create news cars" to Simulator
		[10d task (AS2)] "Keep same cars" to Simulator
		[10e contribution (AS6)] "Create new cars" contributes positively to "Dynamic simulation"
		[10f contribution (AS6)] "Create new car" contributes positively to "simple design"
		[10g contribution (AS6)] "Keep same cars" contributes negatively to "dynamic simulation"
		[10h contribution (AS6)] "Keep same cars" contributes negatively to "simple design".
		[10g task decomposition (AS??)] "Generate cars" XOR-decomposes into "Create new cars" and "Keep same cars"
:07:08.7 ERSON 2	Yeah, you kinda want to make that adjustable.	
:07:11.7 ERSON 1	Yeah.	
:07:12.1 ERSON 2	Kind of want to increase the spawning rate-	**[15 task (AS2)]** "adjust car spawning rate" to Student
:07:15.6 ERSON 1	Yeah yeah yeah yeah	
:07:16.0 ERSON 2	See if you get jams. You're gonna get jams eventually, but, and-	
:07:21.1 ERSON 1	It's at what point you're gonna get	
:07:22.0	At what point that happens, so that might be something you'd want to be	

ERSON 2	able to adjust.
:07:28.6 ERSON 1	So yeah, ok. We're not really talking about this anymore I guess. Are we about to, no regret-
:07:36.7 ERSON 2	No, that was functional. Uhm, ok.
:07:55.1 ERSON 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.
:08:12.8 ERSON 2	Yeah
:08:13.7 ERSON 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.
:08:27.7 ERSON 2	System and the student.
:08:29.3 ERSON 1	Yeah. Uh three, the system, the student and the teacher.
:08:34.2 ERSON 2	Yeah
:08:35.4 ERSON 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.
:09:14.7 ERSON 2	Yeah, I keep thinking about technical architecture and that stuff.
:09:17.4 ERSON 1	Yeah me too, especially when they talk about the means by which a user creates a map. Ok, so we need a user interface, we need-
:09:25.8 ERSON 2	Yeah
:09:26.8 ERSON 1	To store the maps somehow
:09:28.0 ERSON 2	This description is really begging for design patterns and-
:09:31.0 ERSON 1	Yeah
:09:32.8 ERSON 2	But-
:09:35.1 ERSON 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.
:10:06.6 ERSON 2	Yeah. I don't know
:10:12.0 ERSON 1	So yeah. I think we can sort of draw a tree and model of the context view. How we see it.

Time / Speaker	Text	Notes
:10:19.5 ERSON 2	Mhm. Start with interfaces. Ok, this one [inaudible]. Multiple alternative approaches should be encouraged. What does that mean.	
:10:54.8 ERSON 1	Where?	
:10:56.6 ERSON 2	The fourth requirement	
:11:26.2 ERSON 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.	
:12:01.5 ERSON 2	Mhm	
:12:02.3 ERSON 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-	
:12:31.7 ERSON 2	They don't have anything to do with-	
:12:33.2 ERSON 1	Nah, they're straightforward. It's the practical implications that warrant multiple interpretations and multiple models.	
:12:41.5 ERSON 2	Yeah	
:12:45.2 ERSON 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	
:12:54.2 ERSON 2	Yeah. Alright	
:12:55.6 ERSON 1	Ok.	
:12:56.5 ERSON 2	Shall we proceed to the whiteboard then	
:12:58.3 ERSON 1	Let's go. [inaudible]	
:13:02.4 ERSON 2	I'll put my phone near the whiteboard	
:13:18.9 ERSON 1	So which one, context or functional.	
:13:23.7 ERSON 2	We can start with context	**[16 issue]** What is the name of system actor?
:13:25.9 ERSON 1	Yeah? [inaudible] Ok. So yeah, so basically that's a proper name [inaudible]	
:13:52.8 ERSON 2	[laugh] Traffic tycoon.	**[17 actor (AS??)]** Traffic tycoon
:14:03.9 ERSON 1	So, basically a traffic tycoon. Now we have-	
:14:08.5	Yeah so, if we call it a viewpoint you mean the design needs to create a	**[18 issue]** What are the

ERSON 2	map, sense traffic timing schemes and view traffic simulations.	tasks of Traffic tycoon?
:14:20.1 ERSON 1	Yeah	
:14:21.2 ERSON 2	[inaudible]	
:14:21.4 ERSON 1	No, [laugh] well it smells really chemical so sort of worried	
:14:29.9 ERSON 2	Ok. So the means by which you create a map.	
:14:39.0 ERSON 1	Well, for example. I mean, for me that's part of the functional. The point-	
:14:44.3 ERSON 2	Yeah it's on the context so-	
:14:47.3 ERSON 1	Well, as long as it's in the design why don't we call it functional instead of context	
:14:52.6 ERSON 2	So you what you kind of want is the use of a kind of simple map editor	**[19 task]** "Provide map editor" of Simulator
:14:52.6 ERSON 1	Yeah	
:14:57.0 ERSON 2	The simple intersections, simple traffic lights. Those are things you want to be able to add through a map editor	[2
:15:11.2 ERSON 1	And then, we have a set of actions. Save map, open map, add and remove intersection, roads	**[20 task (AS2)]** Student has tasks "save map", "open map", "add intersection", "add road", "add traffic light", "remove intersection"
:15:34.7 ERSON 2	Yeah, road. Intersection, add traffic lights	
:15:42.3 ERSON 1	Well, all intersection should have traffic lights so it's	**[21 critical question CQ?? for 20]** "Is the task "Add traffic light" useful/redundant? **[22 answer to 22]** Not useful, because according to the specification all intersections have traffic lights. **[22a remove task]** Add traffic light
:15:44.9 ERSON 2	Yeah	
:15:45.2 ERSON 1	It's, you don't have to specifically add a traffic light because if you have	

:15:51.4 ERSON 2	They need-	
:15:52.3 ERSON 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-	**[23 critical question CQ2 for 20]** Is the task "Remove intersection" possible? **[24 answer to 22]** It is going to be very difficult to implement. **[24a remove task]** Remove intersection
:16:16.7 ERSON 2	Then this road is going nowhere.	
:16:18.7 ERSON 1	You can't actually remove intersections in the middle because then the heel, entire grid falls apart	
:16:26.4 ERSON 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	
:16:38.8 ERSON 1	What?	
:16:39.4 ERSON 2	The thing is that like, if you have cars disappearing of one side of the map-	
:16:42.1 ERSON 1	Mhm	
:16:42.3 ERSON 2	And then appear in the other. I you do that then you wouldn't be able to remove any intersections.	
:16:47.1 ERSON 1	So. You wouldn't be able to remove any intersection. I mean-	
:16:50.9 ERSON 2	Cause then there's no edge really so then you wouldn't, so that's-	
:16:53.3 ERSON 1	If I-	
:16:53.7 ERSON 2	Definitely not do that	
:16:54.3 ERSON 1	This grid, and I remove this one-	
:16:56.4 ERSON 2	Yeah	
:16:56.9 ERSON 1	Which means these roads basically go nowhere Which isn't allowed and these are no longer intersections. So basically-	
:17:03.7 ERSON 2	Everything is beh	
:17:05.3 ERSON 1	Everything is beh.	
:17:06.7 ERSON 2	Ok so. Yeah	

:17:11.5 ERSON 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	
:17:25.0 ERSON 2	Yeah, so essentially it's always a grid of a certain size. You control the size of it.	**[25 task (AS2)]** Task "control grid size" for Student
:17:30.3 ERSON 1	Yeah you can control this and how many there are.	
:17:33.4 ERSON 2	So, it's a number of nodes and the lengths of the road. Is there anything else we could play around with?	
:17:44.0 ERSON 1	So it is a section	
:17:44.7 ERSON 2	Different arrangements of intersections	
:17:51.6 ERSON 1	There is- no not really	
:17:53.2 ERSON 2	Unless you can put them on an angle while still being four-ways	**[26 issue]** Should four-way intersections under angles be allowed?
:18:01.2 ERSON 1	Yeah true, but when you get crap everywhere [laugh]. I mean it could still work	**[26 option a]** No, it will become very complicated
:18:07.8 ERSON 2	Yeah but-	
:18:10.0 ERSON 1	But what does it add compared to this one	
:18:11.2 ERSON 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.	**[26 option b]** Yes, it changes the flow of traffic, leading to more interesting behavior
:18:32.4 ERSON 1	Yeah, but it should be simple, not scientifically correct.	**[26 argument 1 attacking b]** It should be simple, not scientifically correct
:18:35.9 ERSON 2	Yeah	
:18:36.3 ERSON 1	So it should be a simple where you can see what changes, if you change traffic light timings	
:18:42.1 ERSON 2	So, we are talking about a trade-off. Are we talking about a problem or context you think	
:18:52.4 ERSON 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.	
:19:14.3	I'm gonna call it problem.	

ERSON 2		
:19:15.5 ERSON 1	Sure. Decide number of x y intersections. So, how many intersections and roads length. Yeah, between intersections	
:19:59.4 ERSON 2	I mean you can [inaudible] like this heh. Move this [inaudible], you have intersections there, there and there	
:20:06.9 ERSON 1	Yeah, so the map shouldn't be square	
:20:08.3 ERSON 2	Doesn't have to be square no.	
:20:09.7 ERSON 1	No. So yeah	
:20:13.7 ERSON 2	Well	
:20:14.7 ERSON 1	That's. Yeah that's true. We made an assumption that the map should be square. And that's not true	
:20:24.5 ERSON 2	[inaudible]	
:20:25.6 ERSON 1	We just solved an assumption. I'm not really sure	
:20:31.7 ERSON 2	Well I'm gonna write yours down then. That's square. Let me [inaudible]	**[26 decision]** No. It should be simple, not scientifically correct
:21:01.1 ERSON 1	Yeah true	
:21:06.5 ERSON 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-	
:21:06.5 ERSON 1	Not really necessary that much	
:21:22.4 ERSON 2	Yeah, that's what I think. Uhm, yeah that's the map itself	
:21:32.7 ERSON 1	Yeah	
:21:33.3 ERSON 2	When you're running a simulation you also want to control traffic	**[27 task (AS2)]** Students has task "control traffic when running a simulation"
:21:39.7 ERSON 1	Yeah, but this was the use case on there, which had like couple things, design the map, right?	
:21:46.7 ERSON 2	Oh yeah	
:21:48.6 ERSON 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	
:22:08.3 ERSON 2	[inaudible] not part of our system?	

:22:10.3 ERSON 1	Well, that you have a map editor and a simulator separate as applications, close to the technical side	
:22:17.1 ERSON 2	No, I don't see why it's not complicated enough to divide it into the applications	
:22:23.1 ERSON 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	**[28 task (AS2)]** Student has task "Add sensor"
:22:40.5 ERSON 2	Ok yeah, so add sensor would be it then, a piece of functionality	**[29 critical question CQ?? for 28]** Is the task description clear? (clarification)
:22:52.8 ERSON 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	**[30 answer to 34]** No. New description: "Add sensor to traffic light" **[31 task (AS2)]** Student has task "run simulation"
:23:19.1 ERSON 2	Yeah.	
:23:20.4 ERSON 1	So, sets, yeah, car influx	**[32 task (AS2)]** Student has task "car influx"
:23:41.2 ERSON 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.	**[33 critical question CQ?? on 36]** Is the task description specific/clear enough? **[34 answer to 37]** No, it is not clear where the influx is changing. Change to "control car influx per road"
:24:03.2 ERSON 1	Mhm	
:24:04.0 ERSON 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	
:24:11.8 ERSON 1	Yeah	
:24:12.3 ERSON 2	So setting it per road, I think is something we want	**[34a rename]** "car influx" becomes "control car influx per road"
:24:15.0 ERSON 1	Yeah, that was also one of the constraints I believe	
:24:17.8 ERSON 2	Was it?	
:24:18.7 ERSON 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	

:25:34.7 ERSON 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.	
:25:47.2 ERSON 1	[inaudible] so yeah	
:25:57.9 ERSON 2	And then we have here able to adjust the timing schemes.	**[35 task (AS2)]** Student has task "adjust timing schemes"
:26:02.2 ERSON 1	Yeah yeah yeah	
:26:04.3 ERSON 2	We got the sensors but-	
:26:09.7 ERSON 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.	**[36 critical question (CQ??)]** Is the task "adjust timing schemes" specific enough? **[37 answer to 40]** No, only if there is no sensor. **[37a rename]** "adjust timing schemes" becomes "adjust timing schemes of sensorless intersections"
:26:22.6 ERSON 2	But this [inaudible] control has timing scheme	
:26:26.1 ERSON 1	Yeah, but I mean they can work either on sensors-	
:26:31.7 ERSON 2	Or just add a timer	
:26:32.5 ERSON 1	Or just add a timer and-	
:26:34.3 ERSON 2	Yeah then you get into the situation that people are waiting for no one	
:26:37.2 ERSON 1	Yeah	
:26:37.9 ERSON 2	But, but still-	
:26:40.4 ERSON 1	Well they should be able to simulate traffic and it still happens, believe me, so yeah. Add sensor, remove sensor-	
:26:53.2 ERSON 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	
:27:23.0 ERSON 1	So timing scheme and set, whatever. Add traffic light timings if no sensor	
:27:45.6 ERSON 2	Well I think the existence of a sensor kind of-	

Time / Speaker	Text	
:27:50.5 ERSON 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	
:28:09.1 ERSON 2	It's to do with the timing so, the timers gets going unless the sensor is reboot	
:28:16.0 ERSON 1	Yeah true	
:28:17.5 ERSON 2	He comes from this side and if isn't ever triggered, it stays on red.	
:28:21.7 ERSON 1	Yeah, true. Can be input, the sensors	
:28:25.0 ERSON 2	Or randomly or whatever. So-	
:28:28.2 ERSON 1	What else would be fun, random traffic lights	
:28:31.4 ERSON 2	Like it skips a few possibilities and then it goes on green	
:28:34.2 ERSON 1	Mhm	
:28:35.0 ERSON 2	Communication sensor is broken or something.	
:28:40.4 ERSON 1	So basically these are all functionalities the program should have in the end	
:28:44.9 ERSON 2	Mhm	
:28:46.7 ERSON 1	Should go in functional	
:28:48.4 ERSON 2	Yeah	
:28:51.0 ERSON 1	Ok, so yeah, do we have to make a picture of this. Nah, this was really important for a 3d model	
:28:59.0 ERSON 2	This is not a model	
:29:00.6 ERSON 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	
:29:18.5 ERSON 2	Ok	
:29:19.1 ERSON 1	Because, unless you have more to add to this	
:29:25.5 ERSON 2	Not really	
:29:28.1 nstructor	I just wanted to say, it's been half an hour	
:29:30.8 ERSON 1	Ok yeah. So were gonna try to make a solution I guess. Well, for the functional aspect	
:29:45.2	Yeah, how do you wanna go about doing it. Draw a FAM or-	

ERSON 2		
:29:53.9 ERSON 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-	
:30:06.6 ERSON 2	So, one main thing I would say is the map editor. So editing map as well as a functional block I would say	**[38 issue]** Should the Simulator consist of two separate components "Map Editor" and "Simulation"?
:30:19.7 ERSON 1	Yeah well, I was thinking that as well, but I'm also with [NAME] 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-	**[38 option a]** No, the actions in both components are similar and the user is constantly switching between the two views.
:30:51.2 ERSON 2	Mhm	
:30:51.7 ERSON 1	I mean on the functional level, true, there is a difference between editing and running but-	**[38 option b]** Yes, on the functional level there is a difference between editting and running
:30:57.4 ERSON 2	Well we can make that into two giant blocks	**[38 decision]** Yes
:31:00.2 ERSON 1	Yeah well, I'm thinking too technical. You're [inaudible] because splitting it up at the technical level is-	
:31:08.1 ERSON 2	Right so, if we can just do something like, really big, which is-	
:31:14.1 ERSON 1	Editor	
:31:18.8 ERSON 2	Editor, and the something which isn't in the actual runner	
:31:31.5 ERSON 1	You've already taken back your card I guess	
:31:34.5 ERSON 2	Yeah	
:31:48.9 ERSON 1	Well what kind of. So we have actual intersection designs, actual editor as map design as function, I guess	
:31:58.5 ERSON 2	Yeah	
:32:06.4 ERSON 1	Timing schemes, editor. Timing schemes is-	
:32:12.5 ERSON 2	Timing schema	

:32:14.7 ERSON 1	Schema	
:32:17.0 ERSON 2	[inaudible]	
:32:18.0 ERSON 1	Yeah, so we actually have this one. Well the editor itself catches those two	
:32:29.1 ERSON 2	Mhm	
:32:29.8 ERSON 1	I guess. This is map design, this is map design. The centers, do we call it map design?	**[38a task (CQ2)]** Student has task "Map design"
:32:36.4 ERSON 2	I would say so yes	**[39 decomposition (AS??)]** Task "Map design" AND-decomposes into add road, add sensor to traffic light, control grid size, add intersection, open map, save map, adjust car spawning rate **[*]** *Note: students are drawing here so they don't mention these explicitly.*
:32:37.7 ERSON 1	Ok. So these two ook, the influx per X roads	**[40 critical question (CQ??) for 39]** Does "map design" decompose into "control car influx per road"? **[41 answer to 40]** No, it is part of the simulation. **[42a task (AS2)]** Student has task "Control simulation" **[42b decomposition]** "Control simulation AND-decomposes into "control car influx per road"
:32:42.2 ERSON 2	Maybe that's a part of the simulation already	
:32:43.6 ERSON 1	Yeah	
:32:44.0 ERSON 2	Because you want to adjust that while doing a simulation. Not beforehand	

Time / Person	Text	
:32:48.9 ERSON 1	Yeah	
:32:49.9 ERSON 2	So [inaudible]	
:32:59.3 ERSON 1	Yeah, I wasn't sure how to call it	
:33:01.6 ERSON 2	I know they need to be verbs or [inaudible]	
:33:04.3 ERSON 1	Yeah	
:33:06.1 ERSON 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	
:33:24.6 ERSON 1	Yeah, that's called storage. Here we are still missing actual running of the simulation, so	**[43 decomposition (AS??)]** Task "Map design" AND-decomposes into "run simulation"
:33:37.4 ERSON 2	[inaudible] so right	
:33:45.9 ERSON 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	
:33:53.9 ERSON 2	Yeah. So I think one of them is quite obvious right, that's these two. So, this, from this influx design do you	
:34:07.4 ERSON 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	
:34:18.6 ERSON 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	
:34:33.1 ERSON 1	Yeah	
:34:35.2 ERSON 2	Cause that changes the schema, the he just-	
:34:40.3 ERSON 1	Gets back the added values of new timings or whatever	
:34:45.3 ERSON 2	I just call it scheme	
:34:46.9 ERSON 1	Scheme	
:34:48.0 ERSON 2	And, and he has to be able to sense-	
:34:53.1 ERSON 1	Yeah	
:34:53.5 ERSON 2	A map	

:34:54.9 ERSON 1	Save, load basically	
:34:57.1 ERSON 2	Yeah that's what I mean	
:34:58.7 ERSON 1	Yeah but this is better. So then we also have the runner, so basically can we, can we-	
:35:09.8 ERSON 2	From storage	
:35:11.0 ERSON 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-	
:35:31.3 ERSON 2	I think that's reasonable, also I think you can also store everything before running anyway	**[44 resource (AS1)]** Simulator has resource "storage"
:35:37.3 ERSON 1	Yeah yeah true	
:35:38.0 ERSON 2	You kind of have to instantiate a few things. So-	
:35:41.0 ERSON 1	True, it was an assumption about-	
:35:45.2 ERSON 2	Yeah	
:35:45.5 ERSON 1	If we brought it arrow down	
:35:48.1 ERSON 2	So, from storage to running or can we just say that, or just tell the editor to run it	
:36:00.3 ERSON 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	
:36:18.0 ERSON 2	Yeah. So. So you spell use	
:36:45.9 ERSON 1	Yeah, not really sure how to call it	
:36:52.0 ERSON 2	Yeah	
:36:53.8 ERSON 1	Not really any information	
:36:57.7 ERSON 2	Yeah, not really no. Well you need to know-	
:37:02.1 ERSON 1	What the current value is or something like that	
:37:04.0 ERSON 2	Yeah, I mean, at least you have something like this	
:37:07.8 ERSON 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	
:37:22.5 ERSON 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.	
:37:36.3 ERSON 1	So it's more like an editor then. For the timer	
:37:41.1 ERSON 2	Yeah that's very simple but it's, how do you call it, influx editor	
:37:45.0 ERSON 1	Yeah alright	
:37:46.3 ERSON 2	But it's just adjusting numbers. There is definitely a random number generator involved here. But that's an external library	**[45 resource (AS1)]** Simulator has resource "external library"
:37:55.1 ERSON 1	Yeah that's also-	
:37:56.1 ERSON 2	It's not really functional	
:37:56.8 ERSON 1	Implementation	
:37:57.6 ERSON 2	Yeah. So do we need to look at the UI, as a functional aspect	
:38:07.6 ERSON 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-	
:38:29.0 ERSON 2	Yeah	
:38:29.9 ERSON 1	User stories we can actually map to these things	
:38:32.7 ERSON 2	Mhm, but we have nothing that's really visual there like that	
:38:37.4 ERSON 1	No. true, this is all functional, right, this kind of-	
:38:43.2 ERSON 2	Yeah but, is visual functional. This is a bit of a- you know, you want to inform the user what's going on-	
:38:53.0 ERSON 1	Yeah but-	
:38:53.5 ERSON 2	Through visual, so that's kind of a functional element as well	
:38:58.4 ERSON 1	Interfaces and primary interactions. Not all interfaces can be interpreted as a UI I guess	
:39:05.5 ERSON 2	Yeah [inaudible] probably gonna be very complicated.	
:39:39.5 ERSON 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	
:40:03.4 ERSON 2	So do you just want to say this?	
:40:08.1 ERSON 1	They both use the same run yeah	
:40:11.7 ERSON 2	Yep, different windows with the same runners	
:40:15.5 ERSON 1	Yeah yeah. But you wanted to actually draw the UI or just put it on the module	
:40:24.7 ERSON 2	No just, remember that it's part of the functional	
:40:28.7 ERSON 1	Oh yeah	
:40:29.5 ERSON 2	Ok then.	
:40:35.6 ERSON 1	[inaudible]	
:40:39.1 ERSON 2	User uses the UI, not necessarily this	
:40:52.0 ERSON 1	Awesome work	
:40:55.5 ERSON 2	Alright	
:40:58.6 ERSON 1	So yeah	
:41:01.3 ERSON 2	Let's see if there's any requirements that need to-	
:41:09.9 ERSON 1	I'm gonna make a picture, I think	
:41:13.3 ERSON 2	Mhm	
:41:39.1 ERSON 1	Um, yeah I'll take a picture, cause I think this is a nice model, functional model	
:41:46.3 ERSON 2	Mhm. Just checking if we haven't forgotten anything	
:41:57.9 ERSON 1	So yeah, I was thinking what kind of decisions did we make	
:42:03.5 ERSON 2	Well we haven't made any decisions about how to depict traffic flow	
:42:07.7 ERSON 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	
:42:30.9 ERSON 2	O-O [object-oriented] design really	
:42:31.9	Yeah exactly, so, that's our OO influence. And then we said, well and editor	

ERSON 1	does something significantly different then the simulator, the runner	
:42:44.8 ERSON 2	This is kind of a model-view-controller pattern	
:42:46.1 ERSON 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	
:43:04.8 ERSON 2	Yeah	
:43:05.5 ERSON 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	
:43:18.7 ERSON 2	Yes, I mean, we picture it technical as a technical architecture but	
:43:22.3 ERSON 1	Yeah	
:43:22.9 ERSON 2	But, yeah	
:43:24.4 ERSON 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-	
:43:37.9 ERSON 2	Yeah. Alright, so, um, yeah in the running here that's where any sort of traffic flow things need to be depicted	**[46 decomposition (AS??)]** "show simulation" AND-decomposes into "generate cars"
:43:57.4 ERSON 1	Yeah. Well the depicting is happening here-	
:44:00.6 ERSON 2	Well, they have an actual visual	
:44:01.6 ERSON 1	So, so here it's just we have give back some abstraction of where-	
:44:07.2 ERSON 2	Number of cars	
:44:08.1 ERSON 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	**[47 issue]** Does the Simulator display individual cars or car segments? **[47 option a]** Show individual cars and move them individually **[47 option b]** Show a road with a number in it representing the number of cars on that road.
:44:56.3	Yeah	

ERSON 2		
:44:57.4 ERSON 1	So	
:44:59.4 ERSON 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	
:45:11.9 ERSON 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-	**[47 argument 1 against b]** Having a number on the line does not allow for differentiating between different parts of that segment.
:45:24.0 ERSON 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-	
:45:31.1 ERSON 1	If it's full then people can't pass overhead	
:45:35.1 ERSON 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-	
:45:42.4 ERSON 1	Yes. So this is too simple	
:45:44.5 ERSON 2	Yeah	
:45:45.4 ERSON 1	So we're already talking about a solution to the problem, I guess	
:45:52.2 ERSON 2	Right, write that down. Problem.	
:46:05.1 ERSON 1	And we're three quarters an hour going, so if we want we can get some coffee or something. [inaudible] cold coffee	
:46:14.9 ERSON 2	Are we talking about a constraint, risk, trade-off?	
:46:22.9 ERSON 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	
:46:38.3 ERSON 2	Okay	
:46:38.8 ERSON 1	Yeah, it's constraining in its functionality. It's not really constraint on its entire system	
:46:44.4 ERSON 2	Well it does mean that you want to do something here, with a road length, number of cars	
:46:53.2 ERSON 1	Yeah so, you're actually going, technical implementation to a game engine with a game loop	
:46:58.6 ERSON 2	Yes	
:46:59.7 ERSON 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	

:47:11.4 ERSON 2	Yeah	
:47:13.1 ERSON 1	So basically, there's gonna be a game engine here	
:47:24.8 ERSON 2	Yeah	
:47:25.9 ERSON 1	Specifically the game loop	
:47:28.3 ERSON 2	Yeah	
:47:29.2 ERSON 1	That's about [inaudible]	
:47:35.4 ERSON 2	Yeah aright	
:47:37.4 ERSON 1	But that's technical	
:47:40.5 ERSON 2	How it actually works is technical	
:47:42.2 ERSON 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	
:47:59.9 ERSON 2	Yeah	
:47:59.9 ERSON 1	There's enough free ones so	
:48:02.8 ERSON 2	I mean, this is so simple that it doesn't have a module somewhere	
:48:07.2 ERSON 1	Yeah	
:48:08.0 ERSON 2	But, yeah, anything else functional that we forgot. Sensor, UI map is in here, road length, UI map design	
:48:35.0 ERSON 1	So, we sort of decided within the discussion back, a few little time ago, that we want to simulate individual cars	**[47 conclusion]** a, show individual cars.
:48:47.1 ERSON 2	Yes	
:48:53.0 ERSON 1	Not really a decision, no it's sort of a decision so. We reached a conclusion	