

# Meet je stad!



Geldersestraat

kleine Koppel

Meet je stad!





MEET JE STAD!





# Introduction

Meet je stad! (Measure your city!) is a project in which engaged citizens in and around Amersfoort investigate the climate in their own surroundings. This research is conducted by three groups; the sensor group, the narrative enquiry group, and the flora group. These groups are composed mainly of citizen scientists; ordinary, curious inhabitants of Amersfoort who, driven by individual fascinations, carry out research into temperature, the way people experience climate, and the flowering times of plants in the city. Meet je stad! is also active in secondary schools, where these different research fields are combined.

The trigger for Meet je stad! was the wish of the Municipality of Amersfoort and water association Vallei en Veluwe to involve Amersfoorters in the research into the effects of climate change. The KNMI (Royal Dutch Meteorological Institute) only measures outside the city and Amersfoort was looking for information about climate within the city, at a high resolution and accessible to everyone. Meet je stad! started as a three-year project. The kick-off meeting took place in February. Towards the end of 2017, it will become clear how Meet je stad! will be continued in the future.

The power of Meet je stad! lies in the involvement of citizens of Amersfoort; they take care of the measurements, observations and narratives, and with their unique individual involvement, they decide about the direction and nature of the research. In the publication here before you, you will read about their motives, contributions, and experiences.



# About the sensor group

The sensor group of Meet je stad! occupies itself with measuring factual climate aspects in Amersfoort and the surrounding area. After an intense period of experimenting with the type of sensor, the colour and shape of the casing, the possibilities for sending the data, and the coverage in the city, roughly 40 measuring stations were in place in the beginning of 2017 in Amersfoort, each transmitting its location, temperature, and relative humidity every 15 minutes. The sensor group consists of a steady core of volunteers, supervised by Harmen Zijp, who occupy themselves with technical issues, logistics and sharing knowledge. Then there are a number of people who have a measuring station at home and who make a valuable contribution; through a wireless connection to the Meet je stad! network, their measurements become visible on [www.meetjestad.net](http://www.meetjestad.net) and the results can be compared and analysed. The sensor boxes are not plug-and-play; an important part of Meet je stad! is the workshops that offer the right tools, parts, and guidance that enable those interested to solder a sensor station themselves, including building a well-fitting casing.

One of the most innovative aspects of Meet je stad! is that LoRaWAN is used for sending and receiving the data. The sensor group has thus realised one of the first Internet of Things-networks that offers citywide coverage and content.



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# Meet je stad! = technical innovation

## HOW DID YOU BECOME INVOLVED IN MEET JE STAD!?

**Matthijs Kooijman:** I was already involved in the Fablab here at De WAR and Meet je stad! appealed to me because it is so concrete; to really build something and work on it with a group. And for The Things Network\* I saw opportunities to contribute with Meet je stad!, it is a good use case.

**Kees Broks:** From my background in water management I knew that people usually work with expensive equipment and little is being measured inside the city, because the presence of buildings would give a skewed image. While I'm wondering how we will keep cities inhabitable in a changing climate. I know a bit about what is coming and although it doesn't keep me up at night, it is worrying.

## WHAT TASKS DO YOU DO FOR MEET JE STAD!?

**MK:** I mainly deal with the technical aspects; from writing software to protection against lightning. But there are also practical things we do together, like installing the gateways.

**KB:** In the beginning we looked at what others were already working on in this field. Then we started trying and inventing things; experimenting with our own designs and making our own casings -which all turned out very different- and experimenting with the best type of sensor to use. We had four types of sensors, which all showed very different test results.

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Who **Matthijs Kooijman and Kees Broks**

Involved in the sensor group since the beginning of 2015

In daily life: Broks works as an engineer in urban and rural water management and Kooijman as a self-employed IT professional with a focus on open source and embedded software development

Location and date: De WAR, 11 February 2017



### BUT ISN'T IT THE GOAL IN SCIENCE TO MEASURE AS PRECISELY AS POSSIBLE?

**MK:** We're looking for a balance; we try to gather as much information as we can by using the cheapest possible means. You can buy very precise measuring equipment for a lot of money, but it is also about the fun of doing it yourself and the awareness that yields. By just doing it and continuously asking ourselves how precise this measurement is and what possibilities we have to improve the result, we keep taking the next step every time.

### HOW DO CITIZENS OF AMERSFOORT GET INVOLVED?

**MK:** There have been two workshops so far in which the goal was to build the electronics and a casing. The workshop is accessible to everybody; children can also participate. I found it especially interesting that the participants were so surprised that they were actually able to do it. We design the printed circuit boards ourselves and we choose not to have them delivered ready-made, even though that would be more efficient; they would be smaller, and probably also cheaper. But by allowing people to build part of it themselves, we create more commitment. And maybe curiosity for more.

### HAVE YOU HAD TO ADJUST YOUR EXPECTATIONS OF MEET JE STAD!?

**KB:** I wanted to map what the effects of precipitation are on the city. In the summer of 2014, heavy rainfall in Amersfoort caused shops to flood. I thought: there is a narrative enquiry group, they can go and talk to the shopkeepers. But that's not how it works. The motivation of those involved in Meet je stad! comes from their personal areas of interest.

**MK:** That goes for everything; also for simple things like improving the mounting system or adding functionalities inside

*N : sensor 47*

*lamp post 014371*

*SE: sensor 41*

*lamp post 804710*

*W: sensor 37,*

*unnumbered lamp post*

*NE: sensor 19*

*lamp post 905147*

*S: sensor 31,*

*lamp post 054809*

*NW: sensor 26,*

*lamp post 827467*

*E: sensor 14*

*lamp post 102163*

*SW: sensor 11,*

*lamp post 818658*

the casing, the question is always; what do we have the energy for? We can say this is where we want to go and this is what has to be done, but somebody needs to have the energy for it. We try to influence that a bit.

#### HOW DO YOU SEE THE (NEAR) FUTURE OF MEET JE STAD!?

**MK:** It is more difficult than I imagined to get a stable connection and make everything work reliably. At the moment there is not a single sensor station left of the very first workshop that we still receive data from. Anything could be wrong; the station might be mounted in a bad location, the battery could be empty, there might be water in the casing, there may have been a short circuit. If you make and maintain something yourself, you have control over it, but many of the possible problems are outside your reach.

**KB:** I expect that in a year many more stations will have been mounted and a lot more measurements will be coming in, and the community will have grown. Of course we want to keep those involved on board, so it is important to make sure that the coverage for data transmission in Amersfoort is solid before we organise another workshop. We also want to invite former participants to come back to have their batteries checked and the software on their stations updated.

**MK:** The next step will be to compare and analyse the data; what are the problems, what are the opportunities? We are working on the possibilities for a database analysis so that we can start drawing the first conclusions. And then we can ask ourselves; how will we continue?





Thomas



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### The Things Network (TTN)

The Things Network is a worldwide, fast growing community, consisting at the moment of roughly 18,000 people from more than 87 countries that contribute to a global, wireless network. Just like Meet je stad!, The Things Network adopts a bottom-up approach; it is a non-commercial network, to which everybody can contribute by increasing the coverage by adding a gateway. The Things Network started in the summer of 2015, when

founder Wienke Giezeman, with the help of 100 inhabitants of Amsterdam, achieved complete coverage of the city. TTN works according to the principle of the Internet of Things (IoT), where the lines of communication do not run between people but between devices that share information amongst themselves. Matthijs Kooijman: 'The Things Network fits Meet je stad! well because it uses open source software. In principle, everyone can make use of it.'

# Meet je stad! = digital network

## HOW DID YOU GET INVOLVED IN MEET JE STAD!?

Through Matthijs Kooijman. I know him through my involvement in The Things Network\* and I was immediately enthusiastic. I find Meet je stad! one of the most beautiful community projects of The Things Network. I've put a sensor station in my garden. I literally live next door to the KNMI in De Bilt and I have also connected my sensor station to WOW-NL [Weather Observations Website] by the KNMI. That's a nice calibration point.

## DO YOU KEEP AN EYE ON THE MEET JE STAD! WEBSITE?

No, not really, but that is mainly because there's still a lot to be done with the website. The thermometers that are visible on the website that show the location of the stations are nice, but one should be able to put the combined measurements in a graph. That addition is something that's on the to-do list, but somebody has to do it.

## WHAT DO YOU NOTICE OF THE BOTTOM-UP APPROACH?

When we have a brainstorming session and there are good ideas, the reaction is: good idea, go fix it. That does not work for everyone. Many of us do this besides our day job. In that sense the group could be a bit bigger, so that these plans can actually be executed.

## WHAT DO YOU THINK IS THE VALUE OF MEET JE STAD!?

Data collection is useful, but the awareness that things are changing is the most important. Not that it can prevent

Who **Thomas Telkamp**

Involved in the sensor group since the end of 2015

In everyday life: network architect and technical advisor at The Things Network

Location and date: per telephone De Bilt – Amersfoort, 23 February 2017



climate change, but you can start thinking about how to handle global warming. I notice it myself; if you have one of those stations in your garden, you go and have a look. A measuring station in your neighbourhood makes you more aware of your surroundings. That is why I think it may be a good idea to offer a ready-made station, because not everybody wants to solder it themselves.

#### WHAT IS THE ROLE OF THE THINGS NETWORK IN MEET JE STAD!?

At The Things Network a lot of people get involved who are eager to build something. Meet je stad! is very interesting because it comes from the other side, with a concrete question for which the network of The Things Network can be used. At The Things Network we use LoRaWAN\*, a way to send information over great distances, at a low speed and therefore with low power consumption. It is accessible and practical because it preserves battery life, for instance.

#### WHAT WILL MEET JE STAD! LOOK LIKE ONE YEAR FROM NOW?

I hope the number of participants will have increased. And I think that could work; there's a lot of attention for it and lots of motivated participants. A while ago I took my sensor station to a meeting of The Things Network and there was serious interest from two other cities. It would be great if they too would start working with it, because they can copy what's already there from Meet je stad!, add another step to it, and share that with Amersfoort again.

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### LoRaWAN

The Things Network uses LoRaWAN (Long Range Wide Area Network), suitable for letting appliances communicate amongst themselves.

Thomas Telkamp: 'WiFi works over short distances at a greater speed, while LoRaWAN can send data over long distances but at a lower speed. Because of this low speed it is only suitable for sending small packets of data, and therefore for appliances communicating amongst themselves.'

Harmen Zijp: 'After a first inventory by the sensor group in 2015, we made our proof-of-concept using XBee, which was relatively cheap and could be used for a so-called mesh-network, in which one sensor can pick up data from one other sensor and pass it on to a gateway. The test went well, but the connection was not as good as we expected. Around that time, LoRa became available: cheap, energy efficient, and a reliable connection over great distances. The sensor design underwent a complete overhaul then



and we chose this new technology, including teething pains. That caused quite a bit of delay, but it also produced one of the first IoT networks in the Netherlands that covered the city and had an application.’



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# Meet je stad! = citizen scientists

## HOW DID YOU GET INVOLVED IN MEET JE STAD!?

I was already keeping an eye on Meet je stad! in the newspapers and when I read there would be soldering I thought: Francisca will love that.

Everybody looks for things for their children to do, but I've experienced that my children do not appreciate activities that are organised especially for them. They do like educational activities. Like at De WAR, where they do things that have a greater purpose; building something for insects, altering your own clothes. I find it such a beautiful place, where creativity, technology, and science come together. There are lots of role models there for the children.

## WHAT WAS IT LIKE TO BE AT A WORKSHOP?

It is so nice that there are all sorts of people there; children with accompanying parents, students, all sorts of adults, pensioners. It is a mix you never see.

And the great thing about the concept is that parents and kids work together on something you can really use and that has real value in the world. It is not just tinkering around; in a couple of years it will still be great that we've built this sensor station.

I found it beautiful that during the workshop there were people who had real knowledge and who said; shall I teach you something? And not only to the children but also to me. Actually, I would like this every week, or every month.

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Who **Erica Huisjes and Francisca Sterk**

Involved in the sensor group since the autumn of 2016

In everyday life: Erica works as a care intermediary in mental health care,

Francisca is in the 7th year of primary school

Location and date: living room in the Vermeerkwartier, 18 March 2017

#### HOW IS YOUR SENSOR STATION DOING?

During the workshop the sensor was tested, but when we came home nothing happened, the signal didn't come through. So we first got the advice to mount it higher up. When it still didn't make a connection, something had to be done about the coverage, so extra gateways were mounted, or something? A whole new world is opening up for me! Now the station registers every quarter of an hour and you can see that on the computer. We aren't making comparisons yet, but we do take a look every once in a while. Francisca likes to check the temperature, but in a very exact way; not 'it's about 12 degrees', but 'it's 11.2 degrees'.

#### WERE YOU ALREADY INVOLVED IN THE TOPIC OF CLIMATE CHANGE AND WHAT YOU NOTICE OF IT?

No, not really. They say: it's getting warmer. And they're really just saying things. What I like about De WAR is that they say: let's investigate it. After a while we'll be able to tell whether it's getting warmer or not. We were already involved in the Food Collective, also an initiative at De WAR, where, with a group of 60 people acting as a single buyer, we buy from farmers within a radius of 25 kilometres. Because if you buy your food from the supermarkets, it comes from the weirdest places.

#### YOU ARE CITIZEN SCIENTISTS. DOES IT FEEL LIKE THAT?

No, haha, I can recommend it to anybody, you don't have to do anything. We participate, but we are not driving forces, we are on the sidelines or so it feels. But what our contribution does do is that Meet je stad! brings science closer to the people. It used to be something for rich people.... Francisca: ...and adults!

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### Citizen science

Citizen science, in which scientists mobilise (networks of) volunteers to contribute to their research in the form of, for instance, making observations or measurements, is characterised by Meet je stad! as 'citizen science - old style'. Instead, at Meet je stad! the point is that the research questions and the way the research is done is decided on by that same group of citizen scientists; the contribution of volunteers shifts from supporting to leading and guiding.





# About the narrative inquiry group

Together with the idea of measuring climate data with citizens of Amersfoort, the idea was born to map how citizens experience the climate in the city. The narratives group was called to life in order to ask citizens about their personal experience with climate in their own environment. The starting point is not a survey or in-depth interview, but an open conversation according to the method of participatory narrative inquiry. PNI is a type of research where as many stories as possible are collected in an open and uncontrolled way.

In addition to this, citizens can easily leave their story behind on [www.meetjestad.net/verhalen](http://www.meetjestad.net/verhalen), which will immediately become visible via the map on the homepage of Meet je stad!



# Meet je stad! = experimenting

## HOW DID YOU BECOME INVOLVED IN MEET JE STAD!?

During a meeting at the City Hall about the climate-proof city, the idea was mentioned of a high-resolution measuring network with the help of citizens. I wanted to see if there was a way to make the connection between what is measured and what people actually experience.

From my company de Vertelmaatschappij I then made an offer to Sandra [Sijbrandij, project manager SamenDuurzaam (Sustainable Together), Amersfoort Municipality] that consisted of two parts: collecting stories about climate and about the process of Meet je stad!.

Eventually, we came up with the idea to set up a narratives group. I liked that. It seemed fun, working together in neighbourhoods. Looking back, I have often wondered if it was wise to deviate from the initial plan. There's a strange tension now; I got into a professional deal and here I was handing over my work to a group of citizens. My role changed.

## CAN YOU SAY SOMETHING ABOUT THE COMPOSITION OF THE NARRATIVES GROUP?

It's a small group, but it contains two kinds of people. On the one hand, there are two members of the group who were already very active in two different neighbourhoods in Amersfoort. They have a huge network, a lot of ideas, and they take on a lot of tasks, too many sometimes. On the other hand, there is the participant who has a more project-based approach and who creates structure. There never came any synergy into the group and there were tensions. They seemed to have entered the project with completely different expectations.

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Who **Gerben Bruins**

Involved in Meet je stad! since the very beginning, spring of 2014

In daily life: independent researcher

Location and date: De Eenhoorn and by telephone, Amersfoort, 19 January,

8 June 2017

### WHAT IS YOUR ROLE IN THE NARRATIVE GROUP?

Finding the balance between letting go and offering structure is something which I find quite a struggle. As a group we often sat down together and closed the meeting with to-do's and ideas, but in the next meeting more it often turned out that there had been no continuation of these ideas. That responsibility lies with the group, of course, but given the lack of togetherness I can imagine that this demotivating thought prevails: it all rests on my shoulders. So maybe on certain occasions I should have said: this is how we will do it, this is what we need. But I know it is an enormous time investment, while people do this for fun.

### HOW IS THE NARRATIVE GROUP DOING RIGHT NOW?

About 80 short stories have been collected, mainly by schools. I'd prefer to have a few hundreds, but people don't seem to project their own experiences onto the climate issue. And they don't leave their own story on the website that easily.

Hopefully, we can now find more people and motivate them to participate in the next phase, the analysis; reading the stories, clustering them and looking for patterns.

Normally speaking, working at the Vertelmaatschappij, I look at narratives from a concrete question, answered by somebody who has a direct interest in the answer. Both are absent in this case. That is why it's important that we keep an open mind when we look at what has been produced.



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### Bottom-up

Gerben: 'I have great appreciation for the way Sandra Sijbrandij guides Meet je stad! from inside the municipality. She is really a special civil servant; she brings people together, finances the project, and sees what happens. Then she lets go again, trusting the people who then continue the project. In that sense Meet je stad! is really a project by inhabitants, even if it was triggered by a policy question.

In a bottom-up trajectory you have to dare to take risks; you start something, but you can't say what the outcome will be. When you look at it from this perspective, it all fits, what happened to the narrative group. But for myself, as an entrepreneur, there's some tension. I made promises that I couldn't keep. That is a conflict; Meet je stad! is a citizen science project, but





#### **CAN YOU SAY SOMETHING ABOUT COLLECTING STORIES AT SCHOOLS?**

In December 2014, I did a project week with the Vathorst-college, in which students collect climate stories. This turned out to work well, because the students were asked to interview people in their surroundings, which allows you to reach a wide audience. From collecting the stories, the educational division of Meet je stad! formed.

#### **YOU WORK WITH THE METHOD OF PARTICIPATORY NARRATIVE INQUIRY.\* DO THE STUDENTS USE IT TOO?**

Yes, it's not very complicated, it is about letting someone talk in an open and uncontrolled way about a subject. It is a low threshold method, with the goal of the interviewer to fill in as little as possible. So it is about asking the right question. But collecting stories is not a given; you usually deal with technically schooled students and teachers. Then you notice that people have to be prepared to step out of their comfort zone and make an effort.

it also bears the name of De WAR, the municipality, the water management board, and de Vertelmaatschappij. There can be some room between the goal and the energy that is present. If that is the case, you sometimes have to conclude that you have to let something go, that's part of the process.'

Participatory Narrative Inquiry

During the Climate Day 2016 at De WAR, PNI-expert Cynthia Kurtz gave a presentation: [http://www.meetjestad.net/klimaatdag/downloads/mjs\\_klimaatdag2016\\_kurtz.pdf](http://www.meetjestad.net/klimaatdag/downloads/mjs_klimaatdag2016_kurtz.pdf)



# Meet je stad! = climate experience

## WE ARE NOW IN THE GARDEN OF THE HOUSE OF BARTELS, WHY?

Because it plays an important role in the narrative group. In the beginning we met every three weeks, either here or in the Soesterkwartier, where Joke Sickmann is active. This place belongs to the neighbourhood, where they meet. And it is also a place where a visible measure has already been taken to limit excess water; the basement of the house used to flood, so a pond has been made.

## HOW DID YOU BECOME INVOLVED IN THE NARRATIVE GROUP?

I saw an article in the newspaper about Meet je stad! and read that it was about researching the climate on the scale of Amersfoort. That appealed to me; I'm convinced that climate change must be noticeable here as well. I don't want to ponder climate change but make it very concrete; what do you notice?

## WHAT IS YOUR ROLE IN THE NARRATIVE GROUP?

In my work I'm used to talking to people, I have always done that a lot, to find out what people want. I've always functioned as a driving force, and I try to do that here as well.

At the moment I'm processing the stories that have been collected by putting them into a piece of software; for instance to find out what words are being used a lot and to what extent the stories are based on observations or opinions or political beliefs.

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Who **Willem Meier**

Involved in the narrative group since the start in 2015

In daily life: pensioned business analyst, involved in the living environment, interested in science

Location and date: garden House of Bartels, Amersfoort, 16 May 2017

#### **WHAT HAS BEEN DONE WITHIN THE NARRATIVES GROUP UP TO NOW?**

The narratives group is in its infancy. We've mainly done a lot of preparations during the past year. This is a long-term project.

From the beginning we have agreed on one thing; we should not surprise people, but look for places where neighbourhoods are organising themselves. For me that was the House of Bartels. Together with Riekje Hoffman we joined coffee meetings to get conversations started. It is important to keep coming back, you have to build something up.

A second important point was; how do you avoid opinions raining down on you? Or things that are irrelevant to climate change? We spent the first six months developing an interview method in which you lead people to the question: what do you notice?

#### **DID YOU HAVE EXPECTATIONS OF THE NARRATIVES GROUP AND IF SO, DID YOU HAVE TO ADJUST THEM?**

It was during a winter with almost summer-like days with a lot of precipitation and sewage systems that were not up to the task of getting rid of all the water and I thought; you just open a website and people will start delivering stories. But that is not how it works. You have to remove a threshold. And it may be the case that people do think about climate change and have knowledge about it, but do not relate it to their own surroundings. Especially if there is no extreme weather.

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House of Bartels

The house of Bartels foundation is a neighbourhood organisation in the newly built neighbourhood Het Hogekwartier, which is housed in an old nursery, a green oasis with wandering paths for children, an organic neighbourhood vegetable garden, and a large diversity of plants, trees, and insects. There are plans to have this meeting place make way for housing, but until that day several cultural and green initiatives are being undertaken



#### HOW DOES THE NARRATIVE GROUP RELATE TO THE FLORA AND SENSOR GROUP?

Right now there is little connection, but it would be interesting to pursue that; if the sensor group, for instance, measures that the heat of the industrial area has an influence on the neighbourhood to the west of it, then we as a narrative group have a concrete reason to talk about this to the people there.

#### HOW DO YOU EXPERIENCE CLIMATE CHANGE IN AMERSFOORT?

I've been living in Amersfoort for 7 years now and a while ago I was cycling over a bridge over the Valleikanaal, usually a calmly flowing stream, but now it came almost up to the bridge and it was flowing through the city at a high speed. At those moments you personally experience the power and the danger of an excess of water that has to be carried off. The principle that excess water has to be carried off is very common, but what if the IJsselmeer fills up?

there, organised by active inhabitants and volunteers in order to increase the social coherence in the surrounding neighbourhoods. They work from the belief that a green environment inspires and contributes in a valuable way to people's wellbeing.

Co-initiator Riekje Hoffman, also participant in the narrative group: 'After the summer I'm starting a video project during which I'll be collecting

stories in the Liendert area, based on what elderly people in particular remember about the area. During coffee mornings a lot of stories already came up, including stories about water problems and climate issues.'



# About the flora group

The activities of the flora group of Meet je stad! are based on phenology; the theory of the relationship between weather and life in nature. Annually recurring phenomena, like the development of leaves, the start of the flowering, the ripening of fruits and seeds, the colouring and falling of the leaves are strongly influenced by temperature, precipitation and daylight length. The flora group observes and documents if and in what way the annual pattern in growing or flowering changes throughout the years and if in different parts of Amersfoort there are different observations for the same species.

The core of the flora group has made a list of around twenty indicator species; plants that are sensitive to climate change and start flowering earlier or dropping their leaves later, for example. The list contains well-known or common species like the daisy, foxglove, mayflower, and dandelion. Since the end of February 2016, every inhabitant of Amersfoort can add observations through [www.meetjestad.net/flora](http://www.meetjestad.net/flora). In addition to the indicator list, the website also offers guidelines for correctly executing the observations, to guarantee the scientific quality of the observations as much as possible.

Since March 2017, after a year of collecting flora observations, the flora group has been considering the possibilities of visualising the results.





# Meet je stad! = unlocking observations

## HOW DID THE FLORA GROUP COME INTO EXISTENCE?

Meet je stad! started with an idea for a sensor group and a narratives group and during an interview with a newspaper I explicitly invited people to start their own research. During the kick-off meeting, tree expert Cees van der Linden came up with the idea of the flora group. Luc Noordman was already involved in Meet je stad! and immediately joined the new group.

## HOW MANY PEOPLE DOES THE GROUP CONSIST OF?

The core of the flora group is small: there are only four of us. We try to get together at least once every month and then do some real work, such as adapting some texts. Cees has left the group, I expect that the reason is that it lacks structure and for him, as a professional, it is harder to deviate from the rules of the trade. But the standard rules are not always practical in this context, like the 10 metre rule\* and the use of only the Latin name of the plants without adding the Dutch name. For biologists the Dutch name is misleading, but for most participants it is not.

My guess would be that outside the core team about 10 people are actively adding observations; in 2016 we got about 150. If it had been 50, I would have thought; this group is not viable, but I'm happy with 150.

## YOU STARTED AS THE FLORA AND FAUNA GROUP, WHAT HAPPENED?

I sometimes get fauna observations; I see a common brimstone! The technology is ready, we could apply it, but at the moment there is too little knowledge and interest within the group. We'd like to involve beekeepers, the people in the

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Who **Diana Wildschut**

Involved in the flora group since the beginning

In daily life: artist, researcher, and driving force at

De WAR and Amersfoort Cooperative University

Location and date: De WAR, 19 January 2017

group are almost all beekeepers and that figures; they pay attention to the flowering of plants, it is part of the job. I held a lecture at the local beekeepers association and I think we would get a lot of responses if we were to approach them for the flora group. But first we should formulate a concrete question for them. And we need more manpower to analyse the data they will provide us with.

#### WHAT IS YOUR ROLE?

I'm the driving force. It would be better if someone else took that role but the group is too small for that. Normally speaking I'd let the group collapse to see what would happen, who would take up the task. At the Fablab [open workshop with digital tools at De WAR] Harmen and I did that too; if there was a gap in the schedule, we left the door locked and if a visitor came, we'd send an email; there's a visitor at the door! The Fablab now works independently of us. The letting something collapse is important, because otherwise people get the feeling that they're doing it for you. But to be able to do it that way, you need a critical mass, because there is always a moment when people have other things to do.

#### WHAT DO YOU DO WITH THE OBSERVATIONS THAT COME IN?

Right now we're occupying ourselves with the question in what way we can connect the observations to observations and research questions by the sensor group, such as; what is the influence of an industrial area, a heat island, on the neighbouring residential areas? And how will we visualise that on the website, in what way can we visually compare the data? It would be nice if all the flora species that have been observed would have their own colour that, one by one and



overlapping, appear on the map when a website visitor moves a slider from January to December. But there are many more possibilities and the question is which ones are the most readable and suitable for the information we want to make accessible.

For the programming matters we will most likely ask others; within the flora group there's not much interest in doing that. We've already organised a workshop at the data academy at Amersfoort Cooperative University about D3.js\* which we use for the visualisations.



10 metre rule and other phenological rules

The plants that are being followed should preferably be at a distance of at least 10 meters from a building. This is not possible inside a city. Then there are rules like: choose only plants that are not on a north- or south-facing slope, regularly go and have a look to catch the first day of a phenological phase and choose the same location every year.

D3.js

In order to visualise the data of different groups, Meet je stad! uses Data Driven Documents (D3), a JavaScript library used to present digital data in a visual and interactive way.



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# Meet je stad! = commitment

## HOW DID YOU GET INVOLVED IN MEET JE STAD!?

I took part in the basic course of science that was offered by Amersfoort Cooperative University and afterwards they were looking for people for the flora group. Climate change interests me, also in my work I have to deal with it; because of climate issues, the winters are becoming wetter and in summer the droughts last longer. You need trees that can withstand that. For instance, it's expected that the beech will disappear from the Netherlands. I find that quite a shame; it is my favourite tree. But it's important not to be too conservative in the plant maintenance at the municipality; you have to go with the flow of changes and insights. For instance, it's no longer wise to plant rows of similar trees; it will give you problems like the oak processionary caterpillar.

## WHAT IS YOUR ROLE IN THE FLORA GROUP?

I document flowering data of the plants in my garden and at the beekeepers house, about 400 meters from here, at the Groene Huis. It's important that it's always the same plants, at the same location, so you can see throughout the years whether something has changed or not. I check a couple of times a week and I write down the date and location. For example, the winter flowering honeysuckle starts flowering in January, sometimes in December even. And in the fall I keep an eye on the ivy. And the black hellebore. That one is flowering right now.

## WHAT DO YOU NOTICE OF THE BOTTOM-UP APPROACH AT MEET JE STAD!?

At the plenary meetings I serve as chairman. I thought that would be necessary, to avoid that everyone would be talking

Who **Luc Noordman**

Involved in the flora group since the kick-off meeting of Meet je stad!

February 2015

In daily life: steward tree maintenance at Soest municipality

Also part of the beekeepers apiary commission of Imkersvereniging

Eemkwartier

Location and date: strikingly colourful backyard, region of Park

Schothorst, 1 April 2017

at the same time. I also notice it when Flip is not there, who usually does the minutes. It's difficult to find somebody else for that. People don't easily get up and say, I'll do it.

But I also find it interesting, because it gives me an idea of what the other groups are doing. Then I find out, for instance, that they have been testing a humidity sensor that can't handle humidity...

#### WHAT IS THE ADDED VALUE OF THE FLORA GROUP OF MEET JE STAD! COMPARED TO A FORUM LIKE NATUURKALENDER.NL?

I add observations to that too sometimes, but Meet je stad! is really about Amersfoort. In a couple of years, the goal is to compare the data, including that of the sensor group, so that the municipality can take climate adaptation measures. In the municipality where I work, for instance, we've always been proud of our ecological approach, but because of budget cuts a lot of shrubs are being taken away, because from a maintenance point of view it's too costly, even though those are ecological zones, important for the fauna. Instead lawns are being planted, those need to be mowed, which causes a lot of extra emissions.

#### WHAT WILL THE FLORA GROUP BE LIKE IN A FEW YEARS?

There's still a lot to do. In the old days you used to have neighbourhood councils, something like that, you have to go there. Actually, Meet je stad! should have a dedicated PR person.

And another topical issue: how will this project continue if De WAR has to go. How will things go on? You have keep a project like this going for many years in order to receive some benefit from it.

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### Indicator species

In biology an indicator species is a species that has certain properties from which influences or changes in the environment can be derived. Diana: 'I would have preferred to use the most recognisable species, which everyone learns in primary school, but that's not always possible; crocuses for instance, there are so many types and they all flower at different times. Plus there are two kinds of flowers,

one depends on the length of the days and the other on the temperature.

Only the last is useful as an indicator.'





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# Meet je stad! = awareness

## HOW DID YOU GET INVOLVED IN MEET JE STAD!?

For some reason I ended up in a general meeting of Meet je stad! Probably through the Groene Huis - I was involved in the opening, last year in April. I immediately liked the group, a nice initiative.

## WHAT IS YOUR INVOLVEMENT IN THE FLORA GROUP?

I look in my garden to see what flowers first, write down the date, add that to the website and because there aren't that many plants on the website yet, I take pictures of the flowering plants in my garden, as they could be used on the website. Which by the way is not so easy; how to photograph a plant in such a way that everybody can recognise it? And then I look up the Latin name. I've always ignored those, but now I'm finding that it's actually quite handy; if there's another type, the Dutch name is often no longer enough.

## WHAT ARE YOUR MOTIVES FOR BEING INVOLVED?

I love nature, nature is really important, we are nature ourselves! Everybody knows that; who doesn't go out to sea every once in a while or something? That is why greenery and water in the public space is so important. Every child should have the room to play in green areas and discover.

Just like many others, I feel the threat of climate change, but what can you do? I believe that if people look around them, they will behave differently, they will feel responsible. You don't change the way people and governments treat the public space with one project, but awareness is always good.

Who **Dini Teunis**

Involved in the flora group since April 2016

In daily life: communication specialist at DIEN!

Location and date: flowery garden in Schothorst, May 9th 2017

And all that observing of flowering plants makes you damn happy! At this moment there are about thirty of forty species in bloom! And it's still early, there is more to come.

**WHAT WOULD YOU WANT FOR MEET JE STAD! IF YOU HAD UNLIMITED TIME FOR A YEAR?**

If I had enough time for this, I would try to bring the project closer to the people; for instance highlighting three plants a month, regular newsletters. This isn't criticism of the way it is now, because if you don't direct it, there's also a lot going on, but communication is my profession and this is one of those projects that gets too little recognition.

**MEET JE STAD! IS ABOUT CITIZEN SCIENCE, DO YOU FEEL LIKE A CITIZEN SCIENTIST?**

No absolutely not! I immediately imagine someone in a white lab coat who walks through the garden with a magnifying glass. I always feel hopelessly unscientific. Actually I had never heard of it.

**HAVE YOU NOTICED ANY INTERACTIONS WITH OTHER KINDRED INSTITUTIONS IN AMERSFOORT?**

Well, it sometimes seems illogical that certain things co-exist. Like for instance the 1000 species day, a 24-hour count at Landgoed Schothorst [Schothorst Estate], of all species, from mosses to birds, in the park. There are over 3000 species in the city! I find it too bad that Het Groene Huis and De WAR do not cooperate on that. But it is also good; they both reach different groups. One shouldn't try to direct everything.



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### Green initiatives

In June 2016, the final content of the Green Vision Amersfoort was established, with the motto Together we can make the city greener! Dini was one of the participating inhabitants in the development of the Green Vision: 'Amersfoort needed a new Green Vision, because Amersfoort Green City had expired. Since greenery is so topical in Amersfoort (for instance all the uproar about the trees being cut in the parks Randenbroek and

Nimmerdor), the parties D66, Groen Links, and SP submitted a resolution to make this vision 'unusual'. After that, a unique cooperation started, in which councillors, inhabitants and civil servants developed a vision together through a process of thematic meetings with topics like Ecology, Water, and Edible Greenery.' The entire Green Vision Amersfoort is available at <http://groenvisieamersfoort.nl>.



The motto of the Green Vision is fitting; Amersfoort is teeming with green initiatives. Like for instance Operatie Steenbreek in which Amersfoort participates together with around thirty other municipalities, to make inhabitants enthusiastic for making their immediate surroundings greener, for the sake of increased biodiversity and better drainage of rain water in the city, among other things.

Where Operatie Steenbreek focusses mainly on private gardens, 033GROEN strives for more meaningful greenery in the public space and they are working in many different places to make the city more sustainable. Gerben Bruins: 'A nice example is the Meeuwentuin; first a tiled square, now a beautiful neighbourhood garden. And together with Samenwerkstad, 033GROEN turns school playgrounds into natural playgrounds.'



# About education

Like the flora group, education emerged from the process of Meet je stad!. Gerben Bruins, of the narrative group, found himself at the Vathorstcollege at the end of 2014 to collect stories and because the involvement of education seemed to be a logical next step in Meet je stad!, Karen Wins was added to the team to coordinate the supply to the schools. The projects are tailored to the schools, they take shape through consultation. And so it happened that the students of de Amersfoortse Berg, after having built their own sensor stations, cycled around town with them to measure the difference in air humidity and temperature. Half a year later, the students of 't Hooghe Landt in Amersfoort - as the conclusion to a series of lectures - added their improvements and extensions to the existing sensor station. Answering the question what he does during this project a teacher says: 'Nothing! That is my role, doing nothing. I see students enter into discussions, or not really progressing, but that's part of it.'



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# Meet je stad! = transferring knowledge

## HOW DID YOU GET INVOLVED IN MEET JE STAD!?

I was at the kick-off meeting and did the basic course of science at Amersfoort Cooperative University. I didn't immediately feel connected to any of the three groups that formed, so I didn't join any groups at that time. And then Harmen asked me to do the education part, for all of Meet je stad!

## HOW DO SCHOOLS KNOW THAT MEET JE STAD! EXISTS?

During the last couple of months I've been actively writing to the schools. Before that it went a bit more ad hoc and indirectly; right before the summer holidays in 2016 we approached schools that Gerben was already in touch with and in that period het Groene Huis [home for Culture and Environmental Education in Amersfoort] came up with a kind of education market that we were able to join in the nick of time. It was a great success, everybody wanted us. Even though we didn't have anything yet! No money and no plan, really. That was in September, after that we had to deliberate about the plan and the finances. A month later 't Hooghe Landt said to us: we want to start next week.

## CAN YOU TELL US SOMETHING ABOUT THE PROJECT?

't Hooghe Landt wanted to make a real contribution to research. It's important to know that we are dealing with two Technasium classes [Technasium offers students extra material that focusses on technology], with 4th-year students at havo/vwo level [pre-university education and one level lower] who get four assignments a year on which they work on a weekly basis. They get the assignments from specific, real clients. During this project, the client was Meet

Who **Karen Wins**

Involved in Meet je stad! since the kick-off meeting

In daily life: self employed in (arts) education

Location and date: Meridiaan College 't Hooghe Landt, 3 February

2017 and Fablab, De WAR, 2 June 2017

je stad!. Matthijs [Kooijman, from the sensor group] gave a workshop on how to solder sensor stations for a small group. That group took their knowledge to their project group, and subsequently they formulated a research question and developed it. At the end of the assignment period, they presented their findings and possible improvements or extensions to the sensor station.

A recurring and important part of every project is collecting stories; students see where the research is coming from, that climate change has concrete, noticeable consequences. And of course it's nice to see that the stories immediately pop up on the website.

**IS THE RESEARCH OF THE STUDENTS ALSO VALUABLE FOR MEET JE STAD!?**

It was interesting to see that, during the presentations, Matthijs found out that the students stumbled upon the same things as the sensor group; the same improvements, but also the same difficulties or hurdles. That means they really immersed themselves in the project.

What's happening in the sensor group is very new - new technologies are being used - and it's nice to see that students are taking a contemporary approach. One of the ideas for instance was to develop an app that tells when the batteries of the sensor station are almost empty.





#### ARE THERE ANY MORE SCHOOLS THAT WILL BE WORKING WITH MEET JE STAD!?

Yes, and everything we offer is completely tailor-made. We have, for instance, made a plan for the Vathorst College for a series of twelve optional lessons that will be offered school wide with, for instance, guest lessons on nature photography, botanical drawing, and of course soldering sensor stations. Also with vmbo schools [practical education], we're planning to work on the measuring equipment. Students of the Amersfoortse Berg will come to De WAR as part of the module measuring & interpreting – part of the course Nature, Life, and Technology – to solder sensor stations and find practical applications for them.

#### HOW DO YOU SEE THE FUTURE OF MEET JE STAD! AT SCHOOLS?

Meet je stad! transcends curricula, which is very topical and very local. That makes it so interesting for schools to take part in. And there are so many possibilities to shape it. For instance, I'm in contact with somebody who knows a lot about water infiltration systems and who might want to do a project about that; a water infiltration system at the Vathorst College, wouldn't that be amazing? I'd like to work with engineering agencies and other organisations, but that's difficult and most projects tend to cost a lot of money. And schools often don't have that.

I've made an inventory at schools; what would you really want? And what's it worth to you? Then we can specify and see what's needed. And see what's in it for Meet je stad!. Because Meet je stad! is not necessarily there for the student, the students can be there for Meet je stad! too. It's so valuable that these students can do real research and make a concrete contribution. Now they're already citizen scientists, that's the nice thing about it.





# Meet je stad! = growing & learning

## YOU ARE HERE TODAY WITH A 4 VWO CLASS. WHY?

Last week we were here to solder sensor stations. Today the students will cycle around Amersfoort with them and measure temperature and air humidity. One of the students has divided a map of Amersfoort into several zones and in pairs they'll each cover one of the zones. They'll be moving around for roughly an hour, trying to bike through all the streets of the zone. We can follow their movements on the digital map; every ten seconds or every 50 meters (if you bike fast) the temperature is registered and you see, depending on the temperature, a blue, green, yellow, or red line. [See page 67]

## HOW DID DE AMERSFOORTSE BERG END UP AT MEET JE STAD!?

Together with my colleagues, I teach the course NLT (Nature, Life, and Technology). Measuring & Interpreting is a mandatory part. It is one of the most instructive modules, but also the most boring one; we had been using ready-made data from a website for a long time, but that didn't really appeal to the students. My colleague Paul Alstein was already in contact with Karen and Gerben and when he told me about the project I was immediately enthusiastic; what could be better for the students than to work with your own data? So then, as colleagues, we met with Karen and Harmen to talk about this and then we ended up with this idea.

## WHAT DOES THE MEET JE STAD! PROJECT LOOK LIKE FOR YOU?

The total project lasts about five weeks and we have started with collecting stories. The students find that difficult;

Who **Eva van der Wolde**

Involved in Meet je stad! since April 2017

In daily life: chemistry teacher public lyceum De Amersfoortse Berg

Location and date: Fablab at De WAR, 2 June 2017

imagine a sixteen-year-old teenager who has to ask questions about the climate. But that is also a way of collecting data. And you're allowed to ask your grandma or neighbour those questions. Or your little brother. They liked building the sensor station. One of the students was extra motivated - he had already built a 3D printer at home - and was helping the others. That's the nice thing about such a project, you see the students in a different way. After the cycling trip this afternoon they'll make their own map and graphs, based on the data they have collected.

**DID YOU ALREADY KNOW MEET JE STAD! BEFORE THIS PROJECT?**

No! I didn't even know this existed, at De WAR, this Fablab. If I had known that before, I would have come here ages ago. If it's up to me, we'll do this again next year. We still have to evaluate together and the costs can be an obstacle, but the added value of this project is that it ties in with the experiences of the students, it's about their own city.

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In conversation with the students

What was it like to cycle around with the sensor station?

Yvar: 'The cycling itself isn't exciting or fun, since you only cycle. I did get to know Amersfoort better, but I wouldn't like to do it again. The eyeglass case worked well, but I kept hitting it with my knee so I had to attach it to the back of my bicycle.'

Did the result on the digital map correspond to the temperatures you

experienced on the way? 'It matches what I expected, there were no large differences.'

Are you preoccupied with climate change at school? 'In the first and second year there was a lot of focus on it, but not anymore. Although at every Dutch language test there's a text about the environment.'

Do you think it's a good idea to fill in the course Measuring & Interpreting



in this way? 'I think in this way it's very useful and fun, much more fun (especially making the sensor station) than sitting at your computer doing assignments. This way you also see how things are done in real life.'

#### Sensor station on the bike

The sensor station casings that have been used up to now are not suitable for bicycles. The solution that was found: sensors in eyeglass cases. For the circulation of air, holes were drilled into them and they were painted white to counteract the influence of the sun. Just add a hook, attach it to the bike, and off you go.

Curious about the results? Go to p. 67.



# About the self-organising organisation

Meet je stad! was started as an initiative by Sandra Sijbrandij, project manager Sustainable Together at Amersfoort municipality. Yet this project can be labelled bottom-up, because the client only facilitates. The course and progress of the project are in the hands of the participating citizens of Amersfoort, and the initiative lies with the city, with all the inhabitants who feel attracted to the setup.

But what does it mean to only facilitate; as a client, what can you do in such a case? And what shouldn't you do? What qualities are needed for an organisation to work independently?



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# Meet je stad! = trust

## CAN YOU SAY SOMETHING ABOUT THE STARTUP PHASE OF MEET JE STAD!, BEFORE FEBRUARY 2015?

In my position as a civil servant I was asked to do something with removing tiles from gardens. I got a lot of flyers. Well, I thought, I don't know if that's going to work.

Around that time I was also involved in the Project Bats Amersfoort, in which citizens with a bat detector localise bats in order to protect their nesting places. I noticed that this works really well; I biked around with a bat detector and people were very curious, connections form, between people and with the subject. Also around that time I met Gerben [Bruins, from the narrative group], during a session about climate-proof cities at the city hall and I found his way of doing research very interesting. Daniel, from De WAR, was also there and through him I got to know Harmen Zijp. We met and came to a rough project description and the name Meet je stad!.

## WAS THE MUNICIPALITY IMMEDIATELY PREPARED TO PUT MONEY INTO MEET JE STAD!?

At first, yes, but when it later turned out that the money had to come from several places, it became more difficult. I find it courageous of the aldermen that they agreed.

It's a bit scary; you start a project in which citizens do their own research into climate change. You don't know who those citizens will be, you don't know what they will explore, and what the results of the project will be. But I completely trust that there's a lot more energy and knowledge in the city than we can ever mobilise from behind our desks and that there will probably be good results.

Who **Sandra Sijbrandij**

Involved in Meet je stad! since the very beginning, spring 2014

In daily life: project manager Sustainable Together at Amersfoort municipality

Location and date: City Hall, Amersfoort, 12 June 2017

#### DO YOU HAVE ANY EXPERIENCE WITH THE BOTTOM-UP APPROACH?

I have a background in development work and there you also shouldn't say; this or that has to happen! My role is to facilitate, to empower people. Empowerment, yes, I use the term even though it's very eighties.

I'm used to the tempo; you need time to allow things to emerge. In development work the time period is usually also three years. I say that in the beginning, - but then the message doesn't really hit home yet - and again after a year and a half, so a start can be made with achieving financial independence.

Also inside the municipality I've used this approach before, for instance with O33Energie. And with the bats group as well. And it works, they have been operationally independently for years now.

#### DID YOU SET A TREND WITHIN THE MUNICIPALITY WITH THIS APPROACH?

I can see that we do want change, but it's difficult, we are searching. The question is always; did you achieve your goals? It demands a lot of experience. That's not easy for everybody, but the openness is necessary, otherwise there will be no change.

#### WHAT IS YOUR ROLE IN MEET JE STAD?

It is mainly sensing, a subtle search for what is needed; when to encourage, when to involve my colleagues, can I find more money, facilitate something. But to really interfere, I only do that at the very last moment, the group needs to get as many chances as possible to solve it themselves, in their own way. And that turns out to be good; I really wanted to have sensor stations in one year, but then we still would've been messing around with WiFi and we might not have

stumbled upon LoRaWAN.

By now I can join the meeting of the groups, they're now so confident, they no longer think; oh, there comes the municipality, they're coming to tell us what to do. They do ask me what the municipality wants. Sometimes they do something with that and sometimes I turn it around; I have now ordered 50 sensor stations for the municipality to measure the area surrounding the train station. The plans for that area are in development, so if we can now see and show how warm it is in the middle of the square and for instance how much cooler under that one tree, we can incorporate that into the designs.

#### WHAT QUALITIES DO YOU NEED TO HAVE IN ORDER TO GUIDE A PROJECT FROM THE BOTTOM UP?

You have to be able to let go. Have faith. You have to be transparent. You also need some intuition for when something is at risk of going astray. And then to say to each other; failures are allowed. If you feel that it has to work, it won't. If something doesn't work, no problem, you just see what to do differently. The most important thing is that you have to allow things to emerge.

the city, which demands clever solutions because of an increasing pressure on public facilities and infrastructure. Amersfoort municipality: 'There is a great demand for a high-quality digital infrastructure and room for experimentation to achieve better accessibility of cities, for example. But also energy efficient homes, improvement of air quality, healthy smart urbanisation, and economic vitality are desired.'



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## Meet je stad! = connecting

### HOW DID YOU GET INVOLVED IN MEET JE STAD!?

I think Sandra invited me. I already knew her and she used to send me some articles about citizen science. As a Water Management Board we were already struggling with the question; how do we get more in touch with citizens? We have water management under control, and that has disadvantages; people don't have a clue about the risks of water and the responsibility they can take for it. In the old days there were also farmers in the Water Management Board and the connection was automatically there. Relatively speaking, we now do more for the city, but the self-evident connection isn't there.

When I asked for money for Meet je stad!, well, cheers is a big word, but it was met with a lot of enthusiasm. I told them; it may happen that nothing comes out of it, okay? But they didn't mind. That surprised me. But not all administrators see it that way. Whenever I give a lecture about Meet je stad!, there are always people who want to know what we're going to do with the data.

### WHAT IS YOUR ROLE IN MEET JE STAD!, WHAT DOES THAT LOOK LIKE IN PRACTICE?

Formally, I'm the client and in that sense I facilitate financially. But in practice it's sometimes more complex. Personally, I enjoy it and I'm the kind of person who likes to keep things going. I don't enjoy uncomfortable situations so I sometimes have to control myself not to say; I'll do it!

By now I just do what feels good; to be present at the plenary meetings, for instance, and every once in a while write a report if that's necessary.

Who **Dimitri van Dam**

Involved in Meet je stad! since fall 2014

In daily life: policy advisor planning, Water Management Board Vallei en

Veluwe

Location and date: Sewage purification plant, Amersfoort, 8 June 2017

And of course I have a sensor station. It's mounted at a friend's house in the Soesterkwartier because I live in Utrecht myself. I've brought the station to my office in Apeldoorn a couple of times, it also works there.

#### IS THERE ANY EXPERIENCE WITH THE BOTTOM-UP APPROACH AT THE WATER MANAGEMENT BOARD?

A little; a colleague of mine is involved with de Worp, near Deventer, to work together with citizens to disconnect te drainpipes from the sewer, so rainwater can be led directly into the gardens or the rain water storage. We've made a flyer that can be adjusted to every municipality.

But we do not have many projects like these. We do work a lot with volunteers, but that is something else altogether; they do our work.

#### WHAT IS THE ADDED VALUE OF MEET JE STAD! FOR THE WATER MANAGEMENT BOARD?

Information evenings are usually our only means of contact with inhabitants. And through Meet je stad! I got in touch with a lot of initiatives, I've been asked to think about making school playgrounds greener and how rain water can be given a place there, and I'm involved in Operatie Steenbreek. And that is very useful for the Water Management Board, because if you only get out when you walk from the office to the bicycle shed, you never connect with citizens.

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To take initiative or not to take initiative

In a bottom-up approach, taking initiative is an important issue. Harmen Zijp: 'Someone who is present a lot and takes a lot of initiative can unwillingly leave little room for others to do so as well. Whether or not that's true doesn't really matter if others experience it like that. People tend to think: 'this or that person will take care of it' or 'apparently someone is already doing that'. That's a shame, because many of the creative solutions

come from the people who are not in the forefront. At the same time, when you have one or more recognisable driving forces, there will be progress and a clear communication structure. On the other hand: our sensor station has now been created with contributions from many different people. I find that really special. None of the contributions have been decisive, so everybody can put his or her contribution into perspective. The danger is that too few

#### WHAT QUALITIES DO YOU NEED TO HAVE IN ORDER TO GUIDE A PROJECT FROM THE BOTTOM UP?

In the beginning we thought that people could take photographs after heavy rainfall, so we would end up with a nice database. But that's not how it works, we are not the ones delivering ideas. You have to step in as equals, not attached too much to established structures and be prepared to adjust your expectations. If you hire a consulting firm, you have a goal and a schedule and you can expect something, but the only agreement we made with Meet je stad! is that the money stops after 3 years.

I find it impressive how Harmen, Diana, and Gerben have led the project up to now, they're very capable. You notice it in the little things, like the reaction to the grumbling when there was no coffee at a meeting. Harmen will then say: 'Shall I show you where the coffee machine is?' I learned a lot from their approach.

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people take responsibility and the initiative slips away because the group deflates. Even though something really special emerged that could only exist because of the sum of all those small contributions.'



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# Meet je stad! = guidance issue

## CAN YOU SAY SOMETHING ABOUT THE START-UP PHASE OF MEET JE STAD!, BEFORE FEBRUARY 2015?

Diana Wildschut and I accidentally came in touch with Sandra [Sijbrandij, project manager Sustainable Together]. In a conversation with her it turned out that the municipality needs more climate related data, but also embedding of policy in society, and support based on knowledge. Consultancies can collect data for you, but we thought if you let citizens do it, you not only create a finer data area, but also a living subject for the coffee table or at a neighbourhood party, instead of an advise that ends up in a drawer.

## HOW DID YOU FIND PEOPLE WITH THE RIGHT KNOW-HOW IN THE VERY FIRST BEGINNING?

Diana studied physics, I studied chemistry, so scientifically speaking, the know-how was already present in us. Moreover, we already had some experience with group driven experiences at the Cooperative University of Amersfoort\*. With Meet je stad! we want to lift the idea of citizen science to the level at which citizens are not only used as cheap data gatherers but function as independent researchers.

## HOW IS IT GOING WITH THE MANAGEMENT OF THE MEET JE STAD! GROUPS?

Meet je stad! belongs to everyone, but also no-one. From the start we realised that a large part of Meet je stad! is about the question of how to organise something in a bottom-up way. It's about the energy and the involvement that people feel to do something. Empowerment is important in this. As an example of this: six people have built a sensor station and of those the best one was chosen. That's brilliant, of course, if what you invent will actually be used. It gives you

Who **Harmen Zijp**

Involved in Meet je stad! since the very beginning, spring 2014

In daily life: artist and independent researcher

Location and date: Binnentuin, De WAR, Amersfoort, 11 April 2017

energy. To stimulate that feeling of empowerment, we came up with three rules, which we always fall back on:

1. Ask yourself the question: is what I think is needed really necessary?
2. If you say yes, then ask yourself the question: can I do it myself? If so, go and do it.
3. If you can't do it yourself, do it together.

#### WHAT IS YOUR ROLE?

I try to keep the balance between facilitating what comes out of the group and pulling things towards me to speed things up. Because sometimes the process is too slow and the reward in the sense of visible progress or results, lags behind. The budget guarantees that there is time to let things emerge or have it done. And if for instance there is no concrete (measuring) result, then I want to be able to describe how the process went, so we can learn from it the next time. Finding that balance feels difficult sometimes; I want to offer the client results, but I also want to give the participants freedom. It is incredibly cool that the municipality and the water management board are so open to that, they really want to learn about citizen science themselves and that is fantastic.

#### ISN'T THERE SOME DANGER IN THIS APPROACH? THAT EVERYONE KEEPS HAVING TO INVENT THE WHEEL, FOR EXAMPLE?

Yes, that's true, but the result can also be that you invent a completely different wheel. Or something that you can move without wheels. Lots of innovations happened in places where there was a lot of freedom to experiment. Meet je stad! was originally a three-year project, which means that the end of the project is approaching. How will Meet je stad! be doing in one year's time?

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Cooperative University of Amersfoort

Cooperative University of Amersfoort was founded in 2012 by Diana Wildschut and Harmen Zijp. Harmen: 'It's a cooperation, the way farmers 100 years ago had with dairy factories; together you combine your knowledge and money and you can do what you want. In the case of CUA, that's free research. We think a city like Amersfoort



– with about 160,000 inhabitants – should have a place for knowledge exchange on an academic level. We experience the lack of a knowledge infrastructure as a vacuum. The level of education has been rising for decades, people have a high level of thinking, but still there's hardly any science on an amateur level. At the same time we also see that traditional universities are becoming more rigid, there's increasingly less time for pure

By now, we have set up the infrastructure for the measuring group in such a robust way that it can continue to exist for many more years without any extra money. Can it also exist without a directing role? We'll have to find out. Suppose the money runs out, what will we do then? Then I'll put it to the group, we'll take a look at the options: Will we sell sensor stations? Stop buying supplies? Put in our own money? That's what we do at the Fablab too. Maybe it should get a more association-like structure, but it could also be adopted by the cooperative University of Amersfoort.

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curiosity-driven research. We wanted to offer an alternative with the Cooperative University of Amersfoort. We've made it into a broad pool by not only inviting scientists, but also artists and inventors to join CUA. The way we handle the Cooperative University of Amersfoort has drawn attention; we have given lectures in various places in Europe, from Norway to Italy. To inspire possible participants of Meet je stad!, a basic course of science

took place at the Cooperative University of Amersfoort in the spring of 2015; everyone who is a bit curious can be a researcher, but some background in the history of science and philosophy and searching for information forms a strong basis for citizen science. There are also a few rules of the game that you have to know. But you don't need to have a university education for that.'



# Epilogue

With the end of the funding period in sight, the narrative group has gathered about 80 stories and has become a part of the Meet je stad! educational program. The flora group put 26 indicator species on their website and 150 observations were submitted in 2016.

The sensor group has the materials to build a total of 250 sensor stations; 70 of which have already been built by inhabitants and students in Amersfoort, 50 are under construction for measurements in the area of the train station, and 5 have been sold to a group in Enschede. That means that there are 125 stations available that can be built during workshops in the coming months, and that can partially be sold to other groups (including Houten, Apeldoorn, and Den Haag) which have shown interest.

Now that a lot has been set in motion content-wise, it is time for the next step; becoming independent. Inside the sensor group there is a lot of collaboration with, for instance, RIVM, and in this phase of the project they, and other companies and institutes, are invited to investigate whether they can contribute to a next phase of Meet je stad!. A process in which an open attitude is again important, because only with the wish to be open to everything can innovation exist.

## Colofon

Meet je stad! is a project of Amersfoort Municipality, Water Management Board Vallei en Veluwe, De WAR, Cooperative University of Amersfoort, and the Vertelmaatschappij.

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All technical designs and source code of Meet je stad! can be found on [github.com/meetjestad](https://github.com/meetjestad)

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