



Insights into the Economy of Open Scholarship:

A look into Opasnet with
Jouni Tuomisto, co-founder



About Opasnet

Opasnet is a wiki-based website and workspace for helping social decision-making. Opasnet is maintained and developed by the **National Institute for Health and Welfare (THL)** (thl.fi/en/web/thlfi-en) in Finland. The website collects, synthesises, and distributes scientific information and values. Opasnet is run by a small research group at THL. After a startup phase where the initiative received funding from various projects, enabling the researchers to build the platform, it now receives a small but stable level of funding from THL.

opasnet.org

Opasnet: Business model

Key activities

- ▶ Wiki-based platform
- ▶ Recently launched: concept of knowledge crystals



Organisation type

- ▶ Research group



Key partners

- ▶ National Institute for Health and Welfare (THL)
- ▶ Civil society groups (potentially)



Revenue streams

- ▶ Infrastructure and staff hosted by the National Institute for Health and Welfare (THL)
- ▶ Grant funding (previously)



IP/Copyright

- ▶ All outputs CC BY-SA 3.0



Customers/users

- ▶ Individual researchers
- ▶ Research groups
- ▶ Project partners



Interview with Jouni Tuomisto

Opasnet is a wiki-based platform, which means that it is a website or database developed collaboratively by a community of users that allows any user to add and edit content. It has many similarities with the design of **Wikipedia** (wikipedia.org). While co-founder Jouni Tuomisto rarely produces original data, he synthesises research about environmental health and impact assessment issues and creates models based on that research.

“I started Opasnet in 2006, after I heard about Wikipedia for the first time,” says **Jouni Tuomisto**. “I took some time to look into how it worked, I was really impressed and started to think that this wiki-based approach was the way science should be done. It was so much more efficient than any other system I knew! Because my work synthesises other research, it is a good area for wiki-based work. I can describe the context and analysis online, discuss the content, and then feed it all into the models. I can then show everything online. Such tools did not exist at the time and introducing the wiki format into my line of work was really a revolution.

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“The design and software we use for Opasnet is based on what Wikimedia does – we also licence all our outputs CC BY-SA 3.0 (**Creative Commons, Attribution-ShareAlike - creativecommons.org**), mimicking the Wikipedia

policy. I have been in low-key collaboration with the Wikimedia community, but my role is not an encyclopaedist so our focus is not the same. The main difference is that Wikipedia collects existing information, whereas in Opasnet we are producing new information. We take research data and studies and try to make policy-relevant syntheses that cannot be found in textbooks. But I’ve learned a lot from their processes and, as I don’t believe in reinventing the wheel, I think their policies are the most solid ones for providing a true open source environment.”

During its startup phase, Tuomisto’s research group was working on three large grant-funded projects. Thus, until 2011, Opasnet was very well resourced. As a result, Tuomisto’s research group was able not only to develop the wiki (using **R software r-project.org**) but also to do meta-research on open workflows and the infrastructure needed for that.

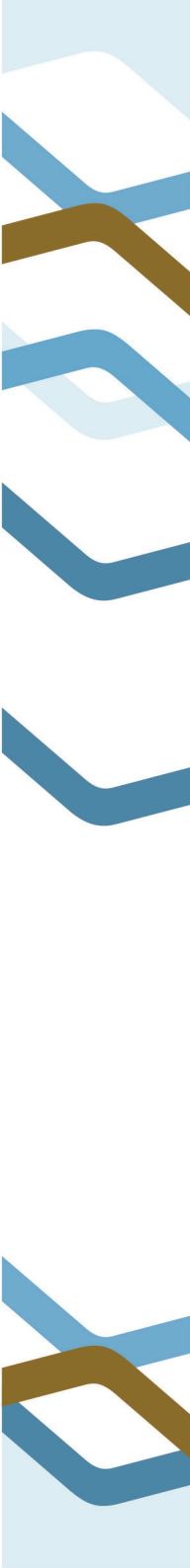
Tuomisto is convinced that this theoretical work about information flows has helped the research group a lot when maintaining the wiki: “A student of mine even wrote a thesis on the way we worked – what kind of structures you need if you are working in an open workspace, what kind of objects you should produce so that they can be criticised and reused. We could also do a lot of practical experimentation with what works and what doesn’t.”

Since 2014, Opasnet has not received much funding, except a small but stable level of support from the THL. The research group has continued to do limited development work on Opasnet and has been able to develop it into a workspace with all the functions the researchers need. The core group of Opasnet users is very small, mainly the seven members of the THL research group that developed it. Occasional, but much less intensive, use has been logged from within THL and also from outside the organisation.

Tuomisto: “We are now being funded enough to maintain and update the system and to keep the website usable, but we haven’t been able to develop it further technically. However, because we had such a head start during our funded period, I believe we got most things right from the beginning – there hasn’t been a huge need for major updates or further development.”

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“That doesn’t mean extra funding wouldn’t be welcome – if we want to do some more innovative work again, we’ll need more team members working on the wiki. We have a current page load of 90,000 per year. I would like to see this number increased. I would love to connect more with people outside of THL as well. Recently, we successfully participated in a hackathon, and for me one of the most exciting outcomes was that I got to connect with **Open Knowledge Finland (okf.fi)** and with the **National Library of Finland (kansalliskirjasto.fi/en)**.”



“In general, I believe overhauling the entire research workflow in my field is a very hard thing to do. I have convinced many people to take one or two small steps, but I have not yet managed to get them to work entirely in the open. I have been trying to convince people to work in open workspaces, but it remains a very controversial idea,” says Tuomisto.

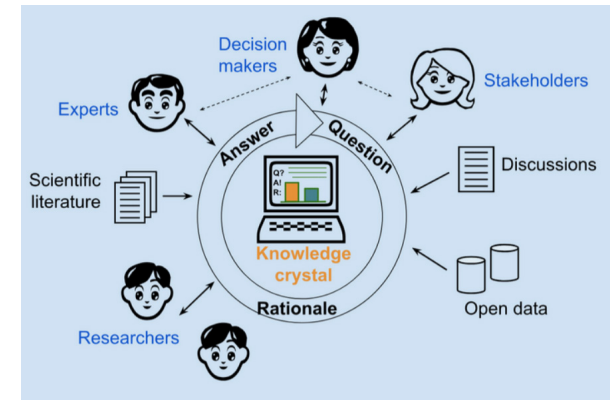
“Most researchers like the idea of wikis in theory, but in practice they remain convinced that they need to publish their research the old way.”

“Most researchers like the idea of wikis in theory, but in practice they remain convinced of the need to publish their research the old way. They only want to open up their data after the publication of an article, and in practice that often doesn’t happen at all – although, quite recently, research data management (RDM) has received some traction because funders are starting to require it. Usually, you spend [all your

funding] developing results, and you only start to think about sharing your data at the end, when the funding has ended – so the incentive to share the data for any given project is small.

“After the project has ended you start a new one and the cycle restarts, and a lot of information just remains inaccessible forever. In my experience, if you don’t open your data at the moment you create it you just never get around to doing so, so I try to convince people to be open from the start but I have not been very successful. In practice, this meant that I used to argue a lot with my colleagues about this. Unfortunately, in project meetings I was often overruled by a majority vote on these matters!”

Quite recently, Opasnet launched the term ‘knowledge crystals’, defined as ‘current best answers to specific research questions, produced and distributed openly using crowdsourcing and scientific criticism’.



Schematic overview of a knowledge crystal

The idea of a knowledge crystal is to combine only the useful parts of information products to support decision-making. An information object is built around a specific research question. The question can be purely scientific but, in the case of decision support, it is usually phrased to precisely address a future decision. To answer the question, experts gather all possible material that could help – mainly research articles, but also research data and expert reports. The strength of a knowledge crystal is that it combines the best of three worlds: it can use all relevant information (not only the researcher’s own data as in a traditional research article), it interprets the data (unlike open data), and it is produced by following the principles of openness and critique (unlike an expert report).

Tuomisto: “As researchers, we have identified three key principles that we’re set to obey at all times – and we’ve given these principles a practical face with the knowledge crystal. The first principle is that all of our work has to be open at all times. The second is that whatever we do must be made available for criticism. The third is that whatever we

produce has to be organised by a topic or research question and stored in a permanent location. Everything is always put in the same place. We improve our answers to the research question but the question can always be found at the same internet address, thus making it possible to develop machine-readable interfaces to the answers.

“These three basic ideas are our guiding principles and we don’t accept any activity that is contrary to them. With our knowledge crystals, we think we have created a tool that will convince others to follow these principles as well – because we have managed to make scientific information clearer and more relatable.”

With the knowledge crystal concept, Opasnet won a hackathon organised by **Helsinki Think Company** (thinkcompany.fi/portfolio/wide) and the National Library of Finland. As a result, the research group has received quite a lot of media attention and collaboration requests.

“Knowledge crystals are an old concept in a new package,” says Tuomisto. “We used to use the terms ‘variables, methods, and assessments’, but these are not very accessible words and are perceived as too technical and complex to be useful. Since we won the hackathon, for the first time I believe we’ve managed to get some real traction around our work. We’ve received media attention and a lot of personal messages from people who are interested in the idea.”

“ I’m really bad at marketing, but the hackathon experience has taught me that it is useful to have an attractive product. ”

“Even within THL, there’s suddenly an interest in what we’re doing! Of course, knowledge about open science concepts has evolved over the last ten years, so maybe people are simply more prepared to listen to us now. In any case, I believe we should try to promote the concept of the knowledge crystals further; from a marketing perspective, it can also be a useful tool to raise funds to continue work on Opasnet. I’m really bad at marketing, but the hackathon experience has taught me that it is useful to have an attractive product. It’s exciting to see others grasping the opportunities, not only for research but also as a basis for policy making.”

*[subsequent to the interview, the city of Helsinki started to use knowledge crystals for the implementation of their **Carbon Neutral Helsinki 2035 Action Plan** (hnh.hel.ninja/), Gwen Franck]*

A wiki-based workspace is a useful tool for research groups to work in a collaborative environment. The question remains whether initiatives like Opasnet are scalable, and whether the same workflows can work for bigger groups of researchers in other fields.

According to Tuomisto, the biggest strength of Opasnet is that it obeys the basic principles as to how science should be done: “Despite our small size, we have been more faithful and more successful in this aspect than most initiatives. We can be a beacon for other researchers, by showing how open science practices are not only better but also more efficient than closed principles. As the most important things are ideas and good practices, supported by open source software, our system is easily scalable. You can join the Opasnet community or copy our code and start your own web workspace, without any restrictions.”

A lot of for-profit initiatives offer similar services to researchers, allowing them to collaborate and share their research. Yet, despite none of them having the flexibility of a wiki, and open science principles being entirely or partially compromised when using these platforms, they remain the most popular solution for most researchers. “Opasnet is not very competitive, despite the effectiveness of our principles,” says Tuomisto. “The initiatives that will get traction are usually the most adaptive and most productive

ones, but these are not necessarily the most open. Commercial platforms are able to develop user-friendly appeal and provide solutions to the immediate needs of researchers, even if their fundamental principles such as intellectual property rights or openness go against the main principles of science. I don’t see myself as an opponent of private companies, who run similar systems for money. I am not fighting against publishers; I simply think their product is not as good as the open solutions. I think open solutions are mostly better and have more impact potential.

“Personally, I have avoided data or vendor lock-in because I am abiding by my open principles, but sometimes colleagues are stuck with their current closed systems and that can make collaboration more difficult.”

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Tuomisto is convinced that the shift towards more open research workflows is not, for most researchers, a natural process. “Imposing open science principles at a higher level, such as via funder or institutional policies, is therefore essential to promote the transition towards open scholarship. I think there’s more room for policy initiatives. Most researchers simply want to do science. They don’t see it as their role to fight old-school publishers and don’t want to endanger their careers. They acknowledge that ‘open’ could be a solution, but they won’t fight for it. If, for example, the **Academy of Finland** (aka.fi/en) endorsed open science principles, most researchers would be happy to comply. But they don’t necessarily know how to do that.”

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“Incentives should be designed to promote open science, rather than punishing it. At the same time, however, it’s essential to acknowledge the efforts previously made – and I don’t have a ready-made solution for that. Luckily, many problems don’t arise until you effectively start to work in the open, and they can then be solved gradually – you don’t need to predict all potential issues and provide solutions for them in advance,” concludes Tuomisto.

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References and relevant links

- ▶ THL: thl.fi/web/thlfi-en
- ▶ Opasnet: opasnet.org
- ▶ Wikipedia: wikipedia.org
- ▶ Creative Commons licence suite: creativecommons.org
- ▶ Open Knowledge Finland: fi.okfn.org
- ▶ National Library of Finland: kansalliskirjasto.fi/en
- ▶ Helsinki Think Company: thinkcompany.fi/portfolio/wide
- ▶ Carbon Neutral Helsinki 2035 Action Plan: hnh.hel.ninja
- ▶ Academy of Finland: aka.fi/en

About Jouni Tuomisto

Co-founder



Dr Jouni Tuomisto has a degree in medical sciences, and over 25 years of research experience in environmental health. He is a chief researcher at THL. His research focuses on health impact assessment and decision analysis. The work of his research group is supported by the wiki-based workspace Opasnet. The group has produced a set of recommended practices for decision support and evaluation, and for the management of decision processes.

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