

# Keys to open data hackathon

Guidelines for higher education institutions  
and developers



**Sara Malve-Ahlroth (ed.)**

# **Keys to open data hackathon**

**Guidelines for higher education institutions  
and developers**

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# Glossary

## **Big Data pilot**

an event implemented in the Open DaaS project after a hackathon which produced solutions that were refined into a more commercializable format

## **Cyber security**

Security of the electronic and networked society

## **Facilitator**

implementor of the hackathon

## **Hackathon**

a combination of the words hacking marathon. It originally referred to individual events where IT professionals gathered to solve problems or develop new applications. The use of the term has later been expanded to mean an organized event where multidisciplinary teams of students, for example, solve challenges set for them.

## **Innovation**

“An innovation is a new or significantly improved product (goods or services) brought to market by an enterprise or a new or significantly improved process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations implemented by an enterprise” (Statistics Finland.)

## **Kick-off**

the opening ceremony of a hackathon

## **Licence**

permission to use data or a software product

**Mentor**

an instructor supporting and assisting teamwork in an expert role

**Open DaaS**

An ERDF-funded project promoting the utilization of open data (2017–2019)

**Open data**

free-of-charge, machine-readable information available to anyone for free use

**Pitching**

a speech intended to help sell your solution

**Start-up**

a new enterprise starting its operations

# Preface

Would you be interested in new types of co-creation with enterprises? Do you want to find new ways of inspiring students to learn about open data?

If you are interested in organizing an open data hackathon for students of higher education institutions in cooperation with enterprises, these guidelines are for you.

The guidelines are designed for both open data veterans and beginners. They run through all the processes of organizing a hackathon from the perspective of utilizing open data.

The ABCs of the operational model for co-creation developed in the Open DaaS project are compiled into these guidelines. The operational model is based on the cooperative utilization of open data so that the students get to develop their open data skills and the enterprises gain new ideas for the development of their business operations. A hackathon functions as a method for learning driven by working life and can be built as part of a learning module or organized as a separate event where the students may collect ECTS credits, if necessary.

The opportunities of open data are extensively discussed, but educational fields outside ICT often fail to explain what it actually contains. Practical and intensive hackathons are an easy way for students, teachers and business representatives to better understand open data, regardless of their field or industry.

There are many new business opportunities in the utilization of open data. It can be used to create services and products that might become the next Finnish success story. Even though there is potential in open data, it has yet to be efficiently put into practice. Higher education institutions and their students can help enterprises in this transition. At the same time, the students can develop their open data competence and skills.

Open data does not simply change the ways of conducting business in the future but also places different requirements for the skills higher education institutions should teach their students.

Have a good time learning about open data!

*In Turku, in August 2019,*

*Sara Malve-Ahlroth*



MAINSTREAM IS

- KNOWN
- ATTRACTIVE
- REWARDING
- EASY

ANTI-CONSUMPTION LIFESTYLE  
SUSTAINABLE

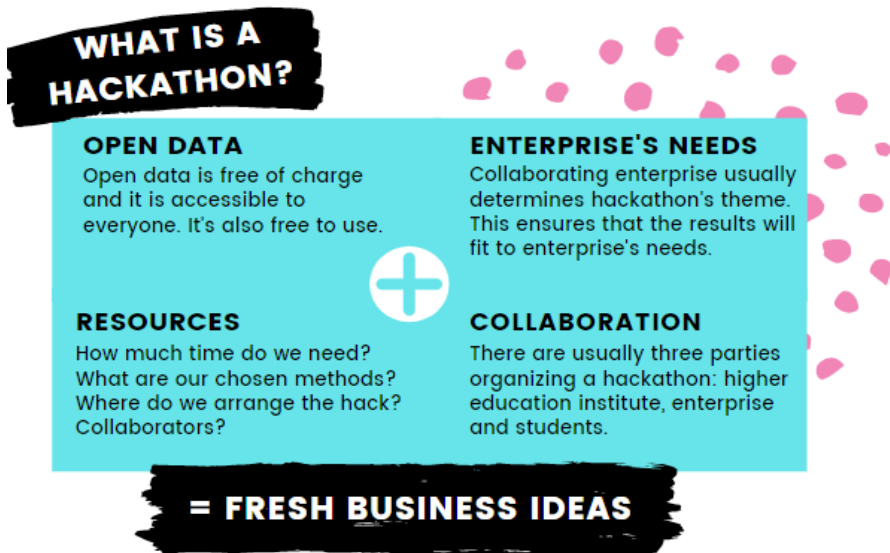
GREY AREA  
BETWEEN  
THE CONSUMPTION  
& USING  
MONEY?

ARE WE  
OR  
CONSUMPTION?

TO SPEND  
THE MONEY  
SAVED?

# 1 Hackathon in a nutshell

The term hackathon comes from the words ‘hacking’ and ‘marathon’. It originally referred to events where IT professionals gathered to hack systems, solve specific problems or develop new applications. The use of the term has later been expanded to mean an organized event where multidisciplinary teams of students, for example, solve challenges set for them. Figure 1 presents the view of the authors of these guidelines on the key elements of the open data hackathon that should be taken into account very early on.



**FIGURE 1.**  
Key elements of an open data hackathon.

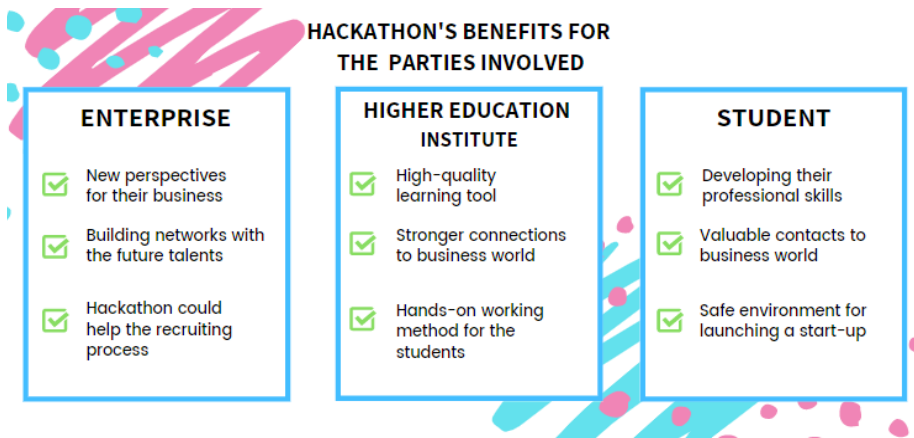
In practice, a hackathon brings students from various fields together for a predetermined time to work on a commission set by an enterprise. The duration of hackathons varies

from one day to a few weeks. A short timeframe requires intensive concentration, teamwork and people skills. At the same time, short hackathons offer enterprises quick and agile ideas for development.

The execution of a hackathon is the sum of various operational and informational pieces and requires an organizer with extensive professional and social competence. A successful hackathon usually requires its organizer to be able to not only create a functional and logical outline for the event but also support and guide diverse teams and offer them a sufficiently comprehensive idea of the subject and goals of the hackathon.

In these guidelines, we have collected some of our tried and true practices based on the 16 hackathons organized during the Open DaaS project and the lessons we have learned. The purpose of the resulting operational model is to primarily help the organizers of future hackathons to create a functional and fruitful framework for the event and tackle the most common challenges and issues.

As evident in Figure 2, at its best, a hackathon can benefit all the parties involved. From the perspective of higher education institutions, the operational model provides the opportunity to utilize hackathons as a high-quality learning tool and as a connecting point between educational institutions and the business world. At the same time, the participants of hackathons can develop their professional skills in an environment that supports learning, try their hand at networking, boost their employment opportunities and even generate new enterprises around their ideas. Correspondingly, the representatives of the business world gain not only new perspectives for figuring out the challenges they are presenting to the participants but also an opportunity to connect with some of the best professionals of the future, thus enabling successful recruiting. We recommend using these arguments on the benefits of a hackathon when marketing the method to the management of higher education institutions, business representatives and students.



**FIGURE 2.**  
Benefits of a hackathon.



## 2 Open data – what and why?

Open data refers to free-of-charge, machine-readable information that is available to anyone for free use. In practice, it may be data accrued or collected by a private individual, researchers, an organization or public administration and made publicly available. According to its definition, open data must be public and legally available; in other words, it must not contain anyone's personal data, business secrets or similar information.

Open data may benefit citizens, businesses, third-sector operators and the public sector. However, utilizing open data as such requires skills, which is why software developers play a key role in creating easy-to-use applications that utilize open data. The distribution portals of open data can also offer features that enable the utilization of open data content through, for example, straightforward visualization functions.

As open data is becoming increasingly available, therefore creating constantly increasing potential for utilization, it can be challenging to find the relevant piece of information from the massive data volumes. To support data acquisition, operators such as Lounaistieto (Lounais-Suomen aluetietopalvelu) have developed open data distribution portals to help users find the relevant information using search engine functions.

Open data enables the development of new operational models and concepts. The available data also supports projects and research. Moreover, open data offers improved analysis of phenomena, more efficient policies and, for example, product development.

Open data must be marked with a licence. Popular licences include Creative Commons Attribution 4.0 and Creative Commons CC0 1.0. We recommend that hackathon organizers learn about the provisions of various licences on the [creativecommons.org](https://creativecommons.org) website, for example. This makes it easier to select purposeful data for the event.





The potential for added value in open data is determined according to its contents and quality. Open data is difficult to utilize if finding and understanding it requires hard work. To make it easier to understand open data, the distributor of the data should add descriptive and accurate metadata to be utilized by both the end users of the open data as well as software developers. Sticking to common presentation and file formats also helps the utilization of data. The machine-readability of open data does not mean that a human should not understand it first and also later.

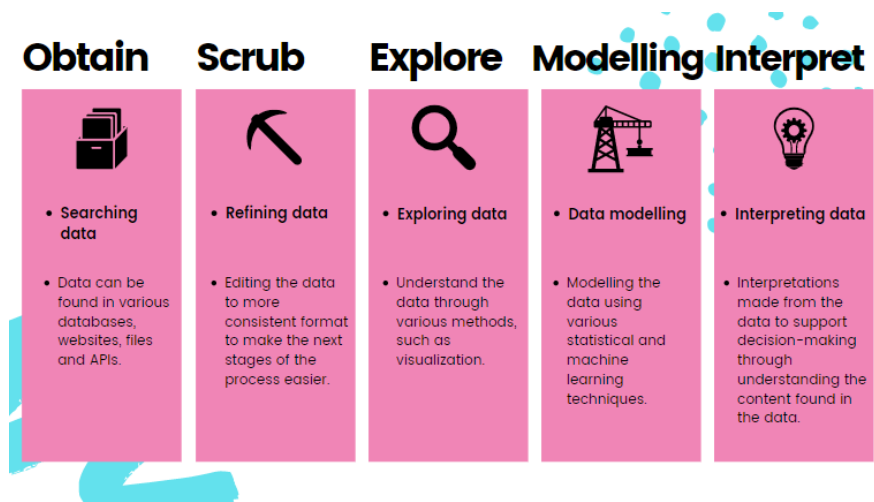
The quality of open data is influenced by a variety of factors. Many practical applications based on open data require up-to-date information. Reserving public facilities, for example, cannot be based on static data updated once a year but needs real-time data from the source system through an open data interface. The level of detail in the data is another factor impacting its usability. Information published as open data may need to be made anonymous for privacy-related reasons, reducing its level of detail. Methods of making data anonymous may include leaving specific information completely unpublished, generalizing information, aggregation of data or partial overwriting.

## The process of applying data

Applying data science can be understood as a five-step process presented in Figure 3. This process is referred to by the acronym OSEMN. The acronym is derived of the following words and concepts:

1. Obtain refers to the obtainment and deployment of various types of data and data sources. The potential sources selected in this context include databases, websites and files in different formats. Another relevant initialism is API (Application Programming Interface), in other words, the service provider's software interface that can be used to search for available data groups.
2. Scrub means that the data groups retrieved in line with the previous step are edited into a more consistent format in this step to make the next stages of the process easier. The measures may be varied from the harmonization of the presentation formats (e.g. decimal separators and timestamps) to eventful imputation where missing values are replaced with the help of various algorithms.
3. Explore means searching for data in order to understand it. This also has to do with the concept of EDA (Exploratory Data Analysis) where the collected and edited data is aimed to be understood through various methods, such as visualization.
4. Modelling the data for the next step, i.e. the interpretation. Modelling is achieved using various statistical and machine learning techniques that can flexibly enable the next step, i.e. interpretation, to utilize the results.
5. Interpreting, in other words interpretations made from the data to support decision-making through understanding the content found in the data.

This classification also works as a framework when designing practical working platforms in hackathons implementing applets and prototypes. This enables the creation of an image or a container where the necessary parts have been pre-installed. Correspondingly, a cloud service can be created for the participants, containing the data and software required for the hackathon. Learn more: <https://developer.att.com/technical-library/best-practices/hackathon-best-practices>



**FIGURE 3.**

The five-step process of applying data.





# 3 Organizing an open data hackathon

Hackathons encourage enterprises to develop new types of applications based on open data and to create startups based on such applications. A number of Finnish cities, such as Turku, Helsinki and Tampere, have realized that events targeted at developers promote the utilization of open data in new applications. The initiative to organize a hackathon may come from an inspired educator at a higher education institution or from the city. Occasionally, enterprises may also organize hackathons due to their own needs. Regardless of the original initiative for the event, we recommend involving the other parties early on when planning the event. This chapter focuses on the key things to consider when planning a hackathon: the roles of the people involved, the co-creation methods to be used, the use of open data and the agreements of business cooperation.

## 3.1 Roles

The people taking part in a hackathon are usually divided into four roles: facilitator, mentor, commissioner and participant. The facilitator and mentor roles may be merged into a single role.

### **Facilitator**

An educator at a higher education institution or another type of expert ensuring the implementation of the hackathon from the beginning to the end, offering the participants the framework to achieve high-quality end results. The facilitator handles the commissions, marketing and the facilitation of the event. Therefore, their duties include organizing the hackathon, communications, business cooperation and other practical arrangements. The facilitator must be an expert of open data as well as its use and potential.

## **Mentor**

The mentor ensures that the work starts off efficiently and that the students are headed towards the set goals. The mentor uses various methods supporting teamwork and innovation. The mentor is present throughout the hackathon (or meeting). The mentor also encourages and supports the teams in between the meetings of a partitioned hackathon. Mentoring is usually conducted in cooperation with the commissioner. The same person can act as both the mentor and the facilitator. The mentor must be an expert of open data as well as its use and potential.

## **Commissioner**

The commissioner is usually an enterprise or a third-sector operator. Before the event, the commissioner plans the goals and challenge of the hackathon with the facilitator and the mentor. The commissioner joins the beginning of the event and gives the participants their commission. During the hackathon, the commissioner must be available for any questions. Sharing the commissioner's expertise, for example in the form of a presentation and working on the ideas of the teams, creates a fruitful starting point for the hackathon. The commissioner can also sponsor the hackathon or offer a prize for the winning team. At the end of the event, the commissioner takes part in the jury and provides feedback on the teams' end results. The commissioner does not have to be an expert of open data.

## **Participant**

The teams consisting of participants must answer the essential questions of the hackathon's theme or work on the challenges set by the cooperating partners by utilizing open data. Usually, the aim is to form the teams out of experts of various fields and industries to achieve a fruitful and comprehensive perspective for developing the solutions. The practical implementation of the solution in itself has not usually been a requirement, taking into account the available resources. Short-term hackathons, in particular, emphasize innovative and tangible solutions. The participants do not need prior expertise on open data, but the starting point for the hackathon is more promising if the participants have somewhat acquainted themselves with the subject in advance.



## 3.2 Various implementation methods

There is no one correct way of executing a successful hackathon. We recommend customizing the event based on the subject matter, the participants and the available data and resources. The Open DaaS project utilized various methods of implementation. This chapter presents the two methods of executing a hackathon as displayed in Figure 4: the continuous and the partitioned. It also covers remote participation as an alternative way of taking part in a hackathon.

### Traditional continuous hackathon 24h/48h

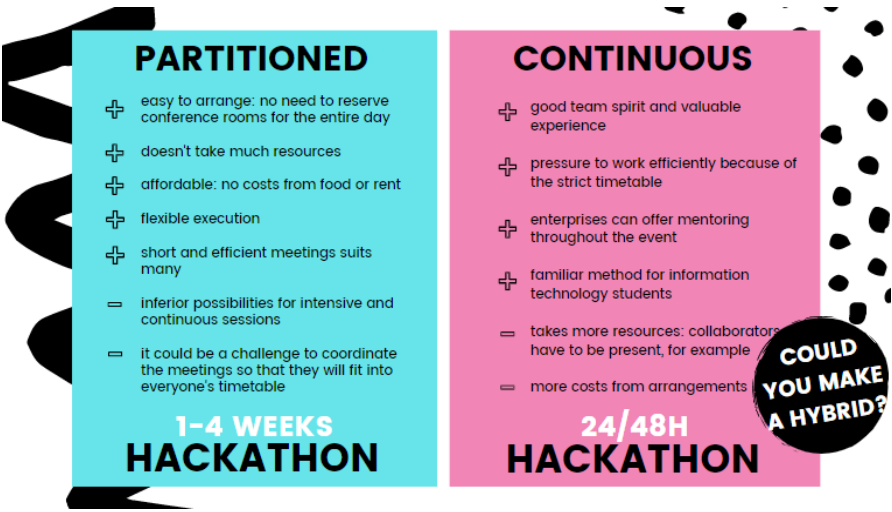
The traditional, continuous hackathon brings the participants together in one location for a set period of time (24 h or 48 h). The benefits of this method include the sense of community and the direct contact with the mentoring enterprises at the event. In these types of events, the organizer usually offers meals and accommodation, which must be taken into consideration when budgeting for the hackathon. The stages of the event follow the exact order stemming from IT events where the challenges are first presented. After this, the teams work on their solutions, finally presenting them as a short pitch (so-called elevator pitch) in front of the jury. At its best, a continuous hackathon brings together multidisciplinary teams and allows students to mingle with students from other fields during this tight-knit event. However, it takes time and resources and may disrupt other studies, especially if scheduled for a weekday.

### Partitioned hackathon

A hackathon can also be executed in parts, whereupon the teams work independently in between meetings. A hackathon can be divided into two or three parts. When divided into two parts, there are separate opening and closing events with the latter containing the teams' sales pitches on their solutions. When divided into three parts, there is also a middle part where the teams present their work and the mentors and commissioners provide feedback and act as a sounding board for their ideas.

Dividing the hackathon into separate opening and closing events is a flexible and affordable manner of organizing an open data innovation event. The participants have more time to work on their solution for the commission, making it possible to execute a more tangible end result during the hackathon. When divided into two parts, a partitioned hackathon could take about 1–2 weeks. When divided into three

parts, a partitioned hackathon could take about 2–4 weeks. We have found that a schedule longer than this reduces the intensity and efficiency of the hackathon. In partitioned hackathons, the commissioner usually participates in the opening and closing events as well as the shared review in the middle. In addition, the commissioner is available during the agreed hours if the teams have any questions.



**FIGURE 4.**  
Comparison of a partitioned and continuous hackathon.

**Remote participation**

Remote participation offers vitally important added value. With a remote connection, a local hackathon can extend provinces or be made national or even international. This is important because the participants motivated by and interested in the subject matter of the hackathon may reside in another locality. It is important to be visible, communicate and offer the chance for remote participation to ensure the best possible exposure for the challenges in the event. As there are so many hackathons and brainstorming contests these days, remote participation offers added value for ensuring sufficient participation.

All the hackathon types described in this chapter offered remote participation. Remote participation enables people in different localities to take part in the event, but the sense of community is not as strong as for those physically attending the

event. Even though the remote participants do not receive as close guidance from the mentors as those physically attending the event, this still gives them the opportunity to participate and make a difference.

Remote participants can join one of the teams working at the event, work on their own or form a team of remote participants. Other higher education institutions may be able to provide facilities for teams participating in hackathons remotely. Remote participation can work if its challenges are taken into consideration when planning the hackathon, teamwork, challenges and assessment.

### **Example of a 24h hackathon – Cyber Security Hack**

The Cyber Security Hack was organized at the South-Eastern Finland University of Applied Sciences in the autumn of 2018. In the 24-hour hackathon concentrating on cyber security, the student teams got to choose either a cyber security challenge related to social influencing, a penetration test of a smart modem or a cyber attack on an authentic copy of an open data interface. The enterprises that set the challenges participated in the hackathon by presenting the subject matters to the students at the beginning and by supporting the teamwork during the event by offering additional information and guidance, if needed. The hackathon focused on cyber threats caused by human behaviour. The event was attended by about 40 students. Eight of the ten teams that took part in the hackathon selected the challenge related to social influencing and brainstormed new applications to solve the problem. The winner was selected by cyber security professionals. The Cyber Security Hack was organized between 1 and 2 November 2018.

### **Example of a partitioned hackathon – Open Data Textile Hack**

The Open Data Textile Hack was organized at Turku University of Applied Sciences between 24 September and 1 October 2018. The hackathon was launched on 24 September with a two-hour opening event where the waste management company Lounais-Suomen Jätehuolto presented its operations and set the challenge for the participants. After setting the challenge, the participants first innovated together, after which they were divided into two competing teams. The teams then agreed on the dates and times when they would work on the challenge together and refined their ideas. During the week, the teams worked independently, collecting feedback on their ideas from the corporate textile industry clients of Lounais-Suomen Jätehuolto. The teams also communicated with a mentor throughout the week and spoke to a representative of the company. At the 1.5-hour event organized on 1 October 2018, the teams pitched their concepts to Lounais-Suomen Jätehuolto who then picked the winning team.

### **Various innovation tools utilized at hackathons**

Various methods of co-creation and innovation can be utilized in the different stages of a hackathon. Usually, the mentor and facilitator plan the methods to be used at the event in advance. Creative methods particularly help the stages of forming teams, brainstorming and ‘selling’ the solution. The used methods can be thoroughly planned in advance and presented to all the teams. Alternatively, the mentor can instruct the individual teams to use the methods suited for their situation when making rounds in the hackathon area.

Turku University of Applied Sciences has collected methods for co-creation and innovation in various publications:

Towards Active and Working Life Oriented Learning. Teaching methods for teachers and training providers. (Haukijärvi, Kangas, Knuuttila, Leino-Richert & Teirasvuo, 2014).

Innovation Camp Manual. Students as a company resource. (Malve-Ahlroth, Lankiniemi, Knuuttila & Virta, 2018).



### 3.3 Use of open data

In the early stages of planning a hackathon, it is important to determine the sources and types of the open data the organizers plan to utilize. Open data has been collected in various portals.

#### **All the public open data in Finland:**

[www.avoindata.fi/en](http://www.avoindata.fi/en).

#### **Open data of the European Union:**

<https://data.europa.eu/euodp/en/home>

#### **Open data of the USA:**

<https://www.data.gov/>

#### **Open data of the UK:**

<https://data.gov.uk/>

There are vast amounts of open data. While they offer many opportunities, fast-paced hackathons may also pose a challenge of identifying which types of open data should be utilized in each challenge. Therefore, we recommend planning the utilization of open data in advance due to the strict schedule of hackathons and providing the participants with examples of the data to be utilized.

The participants are instructed to use open data by generally explaining the concept of open data and offering tangible examples of its use. When explaining the concept of open data, the organizer can also use a preliminary assignment which the students complete and hand over before taking part in the hackathon. Figure 5 presents the preliminary assignment from the Cyber Security Hack as an example. A preliminary assignment related to open data ensures that the participants are sufficiently acquainted with open data before taking part in the event.

## EXAMPLE: PRELIMINARY TASK

**1**

### EXAMINE

cyber threats from different sources.  
Think about different scenarios and  
their dangerousness and probabilities

**2**

### CLARIFY

what does the open data mean and how  
you could use it to better cyber security

**3**

### WRITE

a report (2-3 pages) about your findings and  
return it before the hackathon begins

FIGURE 5.

Example of a preliminary assignment for Cyber Security Hack.

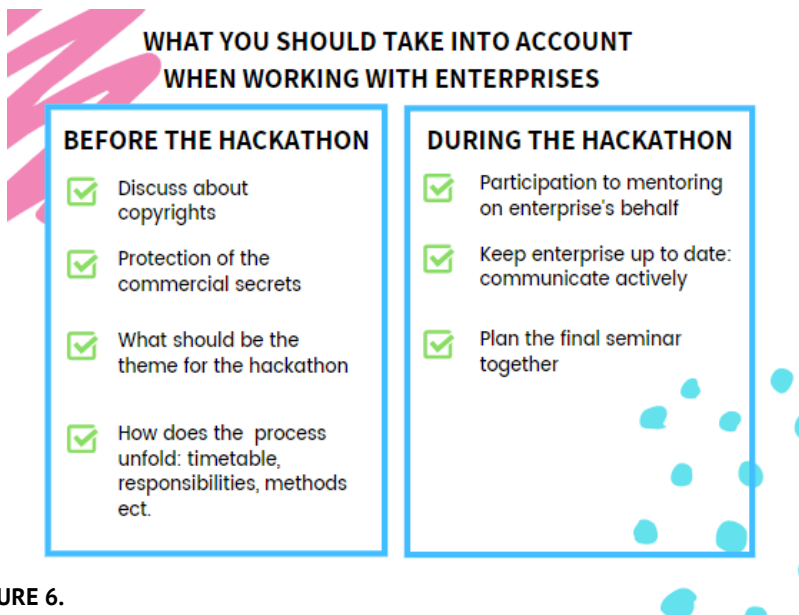


### 3.4 Working with businesses

Hackathons are usually organized in cooperation with businesses. Some of the most typical forms of business interaction include discussing the challenge set by an enterprise between the entire team or in cooperation between the team and the enterprise. When starting discussions with enterprises, it is good to go over all of the common things mentioned in figure 6.

When processing challenges related to the business operations of enterprises, it is important to form a consensus in advance on how any rights related to the potential invention are distributed. Even though the distribution of the rights can be specified in a separate agreement between the enterprises and the teams, legislation concerning intellectual property rights must always be complied with, regardless of the situation.

In addition, enterprises must determine the extent to which they are prepared to disclose potential business secrets. Our primary recommendation is to discuss the protection of business secrets in advance with the enterprise. This prevents intentional and accidental misuse of data and avoids the need for separate agreements that might require the parties to hire legal experts.



**FIGURE 6.**  
Checklist for working with an enterprise.

## Intellectual property rights at hackathons

The legislation concerning intellectual property rights (IPR) forms a legislative framework for the ownership of intellectual capital. IPR legislation creates a copyright for the natural persons who have generated the object of the right, regardless of whether their existence has been separately mentioned. Intellectual property rights play a particularly significant role in brainstorming contests and hackathons whose core function is to support the creation of new innovations. As hackathons typically deal with numerous stakeholders from the competing teams to cooperation partners and the event organizers, each participating party must be aware of the access rights or potential transfer of ownership related to the innovations.

According to legislation, any copyrights related to intellectual capital created at hackathons are valid automatically. An exception is caused by a situation where the parties wish to transfer the copyright to another party with a separate agreement. At the same time, it is important to note that protecting industrial property rights with, for example, a patent requires novelty value from the innovation as well as related active operations. Therefore, in order to preserve the novelty value, it is not recommended to publish the results created at hackathons before examining potential needs for patenting or otherwise protecting the innovations. Taking into account the complexity of intellectual property rights, the organizers are encouraged to spread information on any rights and protective measures especially to parties not acquainted with such rights at the initiation stage of the hackathon.

Learn more about intellectual property rights (in Finnish): [opendaas.turkuamk.fi/immateriaalioikeudet](https://opendaas.turkuamk.fi/immateriaalioikeudet)





# 4 After the hackathon

Successful hackathons usually yield massive quantities of ideas. After your hackathon, we recommend thinking about various means for efficiently utilizing the ideas as final products and services. Refining the ideas into inventions, innovations or startups can be implemented in many different ways, such as Big Data pilots similar to hackathons or as guided teamwork between students.

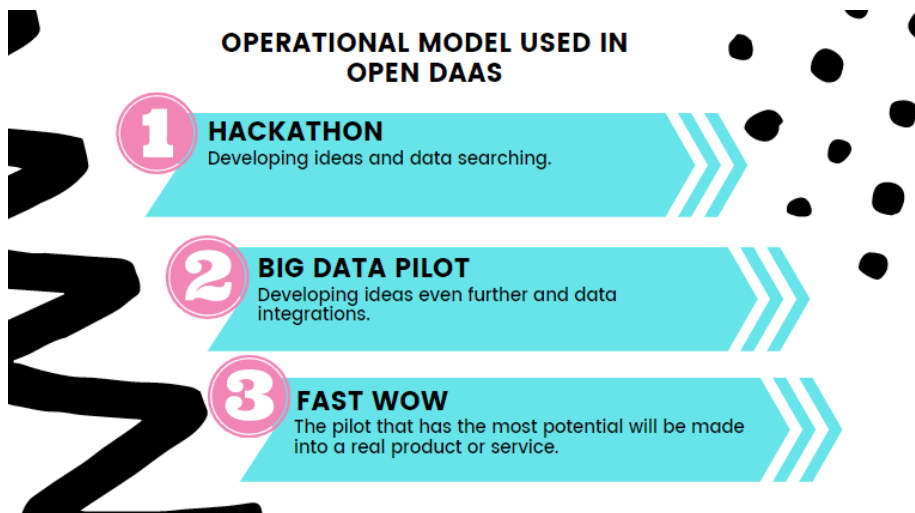
The only restriction to the further development of the results is that the students' intellectual property rights over the developed ideas should also be respected in any refinement of the ideas taking place after the hackathon. The easiest way to ensure this is to involve the team of students in question in the refinement process in the form of traineeship yielding ECTS credits, practical training or the founding of an enterprise. Further development of the ideas is a crucial step where the team of students may also need particular support and encouragement from the organizer of the hackathon. It is also possible that the team of students wants to act independently, for example by founding an enterprise without the hackathon organizer, which is why the participation of the organizer is not always necessary.

Means representing poor policies may include utilizing the idea commercially without permission from its inventors, commissioning another team of students to further refine the idea without permission and mutual understanding or giving the idea directly to an enterprise for utilization without agreeing on the matter first. Occasionally, there may arise a need to involve other people during development work, but this should happen on the terms and, preferably, at the initiative of the team that came up with the idea. The research and development work should not disrupt the students' school work or impact their study performance. In an ideal case, the refinement work of hackathon results supplements the students' learning and offers the chance to put theoretical information to practice in a meaningful way.

In the Open DaaS project, the hackathons were followed by the two steps presented in Figure 7: Big Data pilot and Fast Wow. The purpose of the Big Data pilot, similar to a hackathon, is to promote the utilization of open data in the solutions as efficiently as possible. The Big Data pilots organized in the Open DaaS projects differ from hackathons due to the smaller groups of participants and the more in-depth level of development as the participants explore how to utilize open data as diversely as possible when refining the idea into final products and services. In the final Fast Wow step, only the pilots with the most commercial potential were included to be productized and visualized into completed service products.

In addition to the aforementioned refinement methods, other methods can also be utilized, such as recruiting the students to the company that set the challenge. In this way, a hackathon could act as a channel bringing students and enterprises together. In the past, Hackathons have resulted in new practical training agreements and summer jobs.

We recommend that the facilitator assemble and archive the process and results of the hackathon in some format for the aforementioned further development. Documentation also makes it easier to organize future hackathons as the lessons learned and the key elements for success have been systematically collected and stored. In the Open DaaS project, the results of each hackathon were combined into a documentation template presented in Figure 8. Any hackathon organizer may freely use the template.



**FIGURE 7.**  
Open DaaS operational model.

**HACKATHON'S NAME**  
(date)

- 1 GOAL**  
What did we want to achieve?
- 2 REALISATION**  
How did we arrange the hackathon?
- 3 COLLABORATORS**  
What kind of collaborators did we have?
- 4 VARIABLES**  
What variables were there?
- 5 PREDICTION**  
Were there any predicted impacts?
- 6 RESULTS**  
Was the hackathon successful? What kind of ideas did the process create?
- 7 CONCLUSIONS**  
Were the results reliable?

**FIGURE 8.**  
The hackathon results and lessons learned were systematically documented.



# 5 Conclusion

Digitalization and open data have offered all fields and industries practically unlimited opportunities to assemble and combine information to support their decision-making. The efficient utilization of data is a challenging process that requires multidisciplinary expertise in both working with data and in business operations. The examples presented in these guidelines stem from the higher education institution and university environment where openness and independence come naturally. In educational institutions, hackathons can also be linked to the learning processes and RDI operations whereupon motivating the implementing party and increasing the numbers of participants is simpler. These guidelines may not be fully applicable to internal hackathons of enterprises. They may have higher goals and different requirements in terms of the participants' backgrounds and skills.

Without carefully planning the overall hackathon and outlining the commissions, it is difficult to achieve the desired end result. The development of open data applications requires raising awareness on digital information, its sources and its possibilities. Hackathons and brainstorming contests play a role as a development platform for digital information. Their organization must be systematic in order to enable the enterprises and participants involved in the event to utilize their potential for the common good.

The policies presented in this publication help the organizer to focus on the essential which is a hackathon executed efficiently and with inspiring contents. The execution is facilitated by cooperation between the enterprises and the organizer so that any roles, necessary equipment, data groups and predetermined skill profiles of participants can be combined flexibly and productively.

The organizer must set the goals of the hackathon higher than an individual event. This ensures that the hard work of the students is not wasted and that the best ideas can be refined for use. In the Open DaaS project, the process advanced from brainstorming to products. This benefits all parties because:

1. the enterprises can test their ideas in diverse environments
2. the participants can network with businesses and each other
3. these enable the development and expansion of ecosystems
4. the enterprises find new employees and the participants find new employers.

A key thing to remember in connection with hackathons and the resulting further development is mutual agreements, such as intellectual property rights and confidentiality obligations. The better these topics are discussed early on, the more agile the entire process will be.



# 7 Open DaaS project

The goal of the Open DaaS – Open Data as a Service project was to create a co-creation operational model utilizing open data and digitalization for micro enterprises and SMEs.

Services produced with open operational models may be the next Finnish success story. However, utilizing open data in business is only taking its first steps. At the moment, most of the data is hidden away in bureaus and businesses and SMEs do not have the opportunity to utilize open data due to the specialized skills its use requires. Enterprises spend time searching for information, reading metadata and combining pieces of data obtained from different sources. We must escape these rigid structures and develop network-type, flexible operational models. The Open DaaS project was able to create one operational model matching these needs. The model was presented in these guidelines.

The project was implemented with four work packages with one higher education institution participating in each one. The themes of the work packages were circular economy, digital reformation, smart traffic and the challenging and colliding of business models. In practice, each work package organized several hackathons related to its theme in cooperation with businesses. After this, the most viable ideas from the hackathons were selected for further development.

Open DaaS was launched in September 2017 and concluded in August 2019. It was financed by the European Regional Development Fund. The project was executed by Turku University of Applied Sciences, South-Eastern Finland University of Applied Sciences (XAMK), the University of Turku and Metropolia University of Applied Sciences.

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Tilastokeskus. Käsitteet. Web document. [Accessed 30.4.2019] Available: <https://www.stat.fi/meta/kas/innovaatio.html>

## Suggested materials:

[opendaas.turkuamk.fi](https://opendaas.turkuamk.fi)

<https://developer.att.com/technical-library/best-practices/hackathon-best-practices>

This guide has been published in Finnish and English. The Finnish version is available at <http://julkaisut.turkuamk.fi/isbn9789522167316.pdf>



Would you be interested in new types of co-creation with enterprises? Do you want to find new ways of inspiring students to learn about open data?

If you are interested in organizing an open data hackathon for students of higher education institutions in cooperation with enterprises, these guidelines are for you. The guidelines are designed for both open data veterans and beginners. They run through all the processes of organizing a hackathon from the perspective of utilizing open data.

The ABCs of the operational model for co-creation developed in the Open DaaS project are compiled into these guidelines. The operational model is based on the cooperative utilization of open data so that the students get to develop their open data skills and the enterprises gain new ideas for the development of their business operations.

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