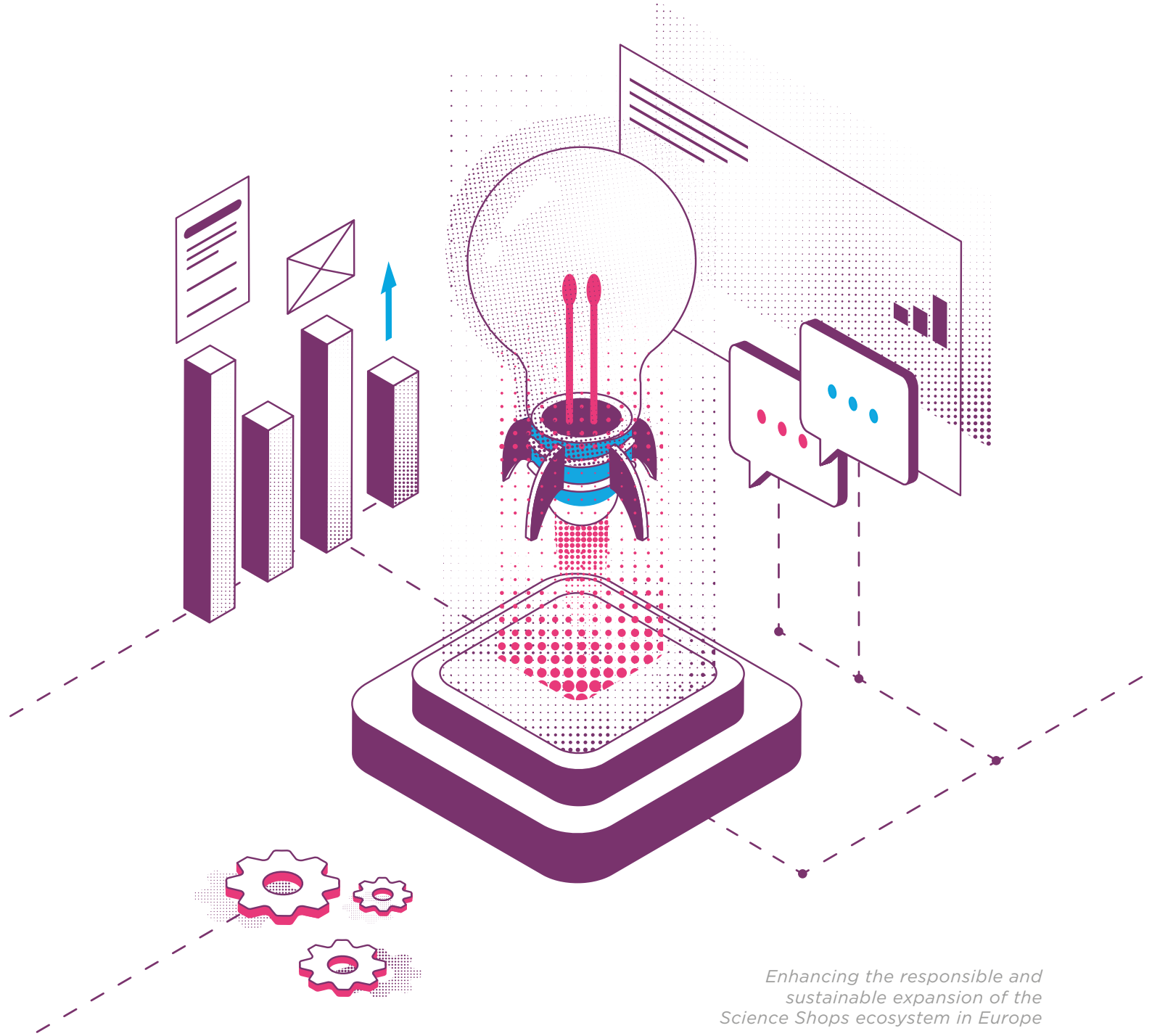
Science Shop

SciShops

Establishment Guide



Enhancing the responsible and sustainable expansion of the Science Shops ecosystem in Europe

This guide has been produced as part of SciShops.eu (Enhancing the Responsible and Sustainable Expansion of the Science Shops Ecosystem in Europe), a Horizon 2020 project aimed at promoting the growth of socially responsible community – based research in Europe.

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Introduction

Starting a Science Shop is challenging. It involves planning many different aspects and taking concrete steps towards its establishment. The aim of this guide is to help people or organisations through this process by highlighting the main aspects of establishing and running a Science Shop, taking into account different types of organisational models of Science Shops. The guide provides an overview on what to consider when developing your own Science Shop model, the steps that need to be taken to establish a Science Shop, the various aspects of running a Science Shop. It also discusses some of the challenges that may be encountered along the way with suggestions of how to overcome them.

The guide is structured around the main important aspects that need to be planned when establishing a Science Shop. These aspects are arranged into a Science Shop Model Canvas (based on a Business Canvas), which can also be used as a planning tool. After the first chapter that presents the Science Shop Model Canvas and the steps to be taken to kick-start a Science Shop, the guide proceeds through each of the aspects laid out in the Canvas: Basic questions (what and why?), Organisational structure, Staffing, Implementing projects, Funding, Clients, Stakeholder engagement, Communication, Project evaluation and Impact assessment, Challenges, and Sources of support.

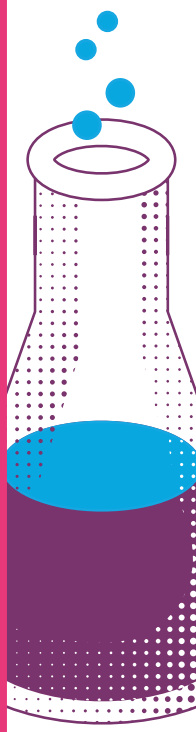
Each chapter is divided into concrete questions with the aim of addressing the most important issues that those who are establishing and running a Science Shop might encounter (FAQ). The guide can either be read from beginning to end to get an insight into what it takes to run a Science Shop, or consulted for guidance on specific aspects or questions.

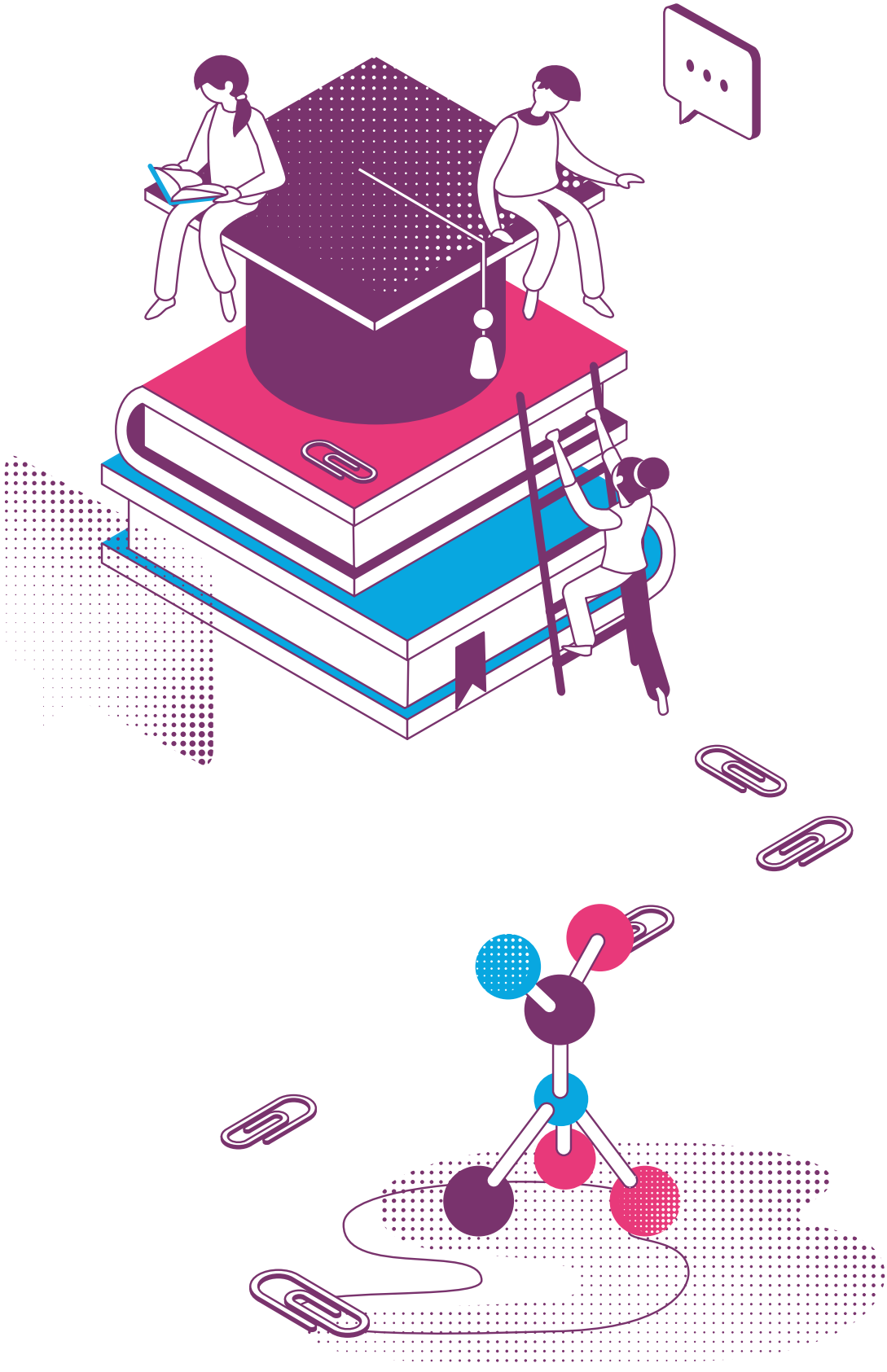
The guide is intended to support the establishment and running of different types of Science Shops – independent ones as well as those established at an existing organisation: university, research institute, non-profit organisation, company. As many of the aspects discussed in this guide are relevant to all types of Science Shops, the guide is presented as one comprehensive guide with any differences between organisational models highlighted wherever relevant.

The guide is based on knowledge about running Science Shops, best practices, and challenges accumulated throughout the SciShops.eu project and published in its deliverables, as well as other information on various aspects of Science Shops, such as the Living Knowledge Toolkit and other sources listed in the references.

01

Setting up a Science Shop





What to consider when setting up a Science Shop?

When a Science Shop is being set up, many decisions need to be made relating to the type of organisation or the entity that is to be established. There is no dominant or prescriptive organisational model for a Science Shop, since there are many possible combinations and varied examples of existing Science Shops. Each Science Shop is unique and must take advantage of available resources, expertise and other environmental factors in order to decide the best approach.

When establishing a Science Shop, you will need to think about several important aspects relating to how it will be run. This process is similar to starting a commercial business when entrepreneurs have to think about who will be their customers, their costs, potential income streams, the number and type of employees they will need, and similar questions. Just as a company needs a business plan, a new Science Shop should also think about its 'business model'. Here we suggest using a well-known Business Model Canvas (Osterwalder and Pigneur, 2010), which provides a one-page overview of what you should take into consideration when establishing a Science Shop.

The individual elements of the SciShops.eu Project Model Canvas capture ideas for separate activities or resources, while the overview shows how the pieces fit together and encourage fresh perspectives. This structure also can be used to facilitate group discussions about a Science Shop, to keep the discussion focused and ensure the initiating group and involved stakeholders are on the same page. We recommend that you fill out this canvas during your initial planning. The Canvas adapted for Science Shops, in which the relevant aspects of the guide are referenced, is presented below in Figure 1; A blank SciShops.eu Project Model Canvas is presented at the end of the guide.

The guide is structured around the Science Shop Model Canvas. Each of the components of the Canvas is described in more detail in the relevant chapters of this guide. The canvas starts from the middle, with basic questions about the Science Shop (Ch. 2). The left side of the canvas represents the internal environment of the Science Shop (organisational structure, staffing, project management, Ch. 3-5), the right side – the external environment (clients, stakeholder engagement, communication, Ch. 7-9). The bottom line of the canvas includes the main input of the Science Shop – funding (Ch. 4) and the output – its impact (Ch. 10). Additionally, the guide includes a chapter about the main challenges that Science Shops face (Ch. 11) and a chapter on additional sources of support for Science Shops (Ch. 12).

You don't necessarily need all of these aspects in place to start a Science Shop. Many Science Shops start by piloting activity and refining their business model and processes as they gain experience. This is described in the next section.

SciShops.eu Project Model Canvas

ORGANISATIONAL STRUCTURE

- Where will it belong or will it be independent?
- Where it will be located, or will it be a virtual Science Shop?
- Will it be a permanent or a pop-up / pilot science shop?

STAFF

- What will the management structure look like?
- Who will coordinate the Science Shop?
- Who will implement the projects?
- How will we deal with the constraints of working in higher education?

IMPLEMENTATION OF PROJECTS

- What will be the role of the Science Shop coordinator?
- What formal agreements will we have with clients?
- What project management procedures do we need?
- How will we take ethics into account?
- How will we ensure quality management?

BASIC QUESTIONS

- What is a Science Shop?
- Why we want to have a Science Shop?
- What will our Science Shop do?

START HERE

STAKEHOLDER ENGAGEMENT

- Who will be our stakeholders?
- How will we involve community organisations and other stakeholders?

COMMUNICATION

- What will be our communication goals and objectives?
- What communication activities will we undertake?
- Who will implement communication activities?
- How will we measure the effectiveness of communication?

CLIENTS

- What types of organisations will we work with?
- How will we research the needs of potential clients?
- How will we collect research questions?

FUNDING

- How will we fund the Science Shop?

PROJECT EVALUATION AND IMPACT ASSESSMENT

- What types of project evaluation will we undertake?
- How will we perform project evaluation and impact assessment?

CHALLENGES

- What challenges are we likely to face and how we will deal with them?

SOURCES OF SUPPORT

- What support we will need?
- Where will we look for support?

Figure 1. Science Shop Model Canvas. A blank Canvas can be found at the end of the guide.

How do you get a Science Shop off the ground?

When you have an idea of how your Science Shop will operate (Chapters 2–12 and the Science Shop Model Canvas at the end of the guide are designed to help you in that), you can start taking concrete steps to get it off the ground. Here, there are three main tasks: preparing to establish the Science Shop, collecting the first research requests, and implementing the first pilot project.

Preparing to establish a Science Shop:

(based on McKenna 2018)

- **Survey the territory –** get to know the policy context, identify relevant funding streams, etc.;
- **Build relationships / alliances –** analyse your networks, identify relevant professional organisations and networking opportunities, initiate dialogue with civil society, develop relationships with policymakers;
- **Inform –** communicate about your Science Shop, ensure that people understand the work and methods of a Science Shop, inform how to submit questions.

Generating research requests:

- **Analyse the demand from civil society organisations (CSOs) –** introduce the Science Shop to your local community groups, perform a needs analysis, identify needs from mass media coverage, consult about needs with CSOs during meetings, workshops, conferences and forums, etc.;
- **Develop tools for collecting questions** (e.g. internet platforms), prepare research questions databases;
- **Promote the Science Shop** through your local communication channels. Announce that there is an opportunity to submit questions and explain how to do it. Be careful not to promote more than you can offer as you need to be able to handle any requests. You can do a big communications push once you have piloted your first project and have the capacity to undertake a larger number of projects.

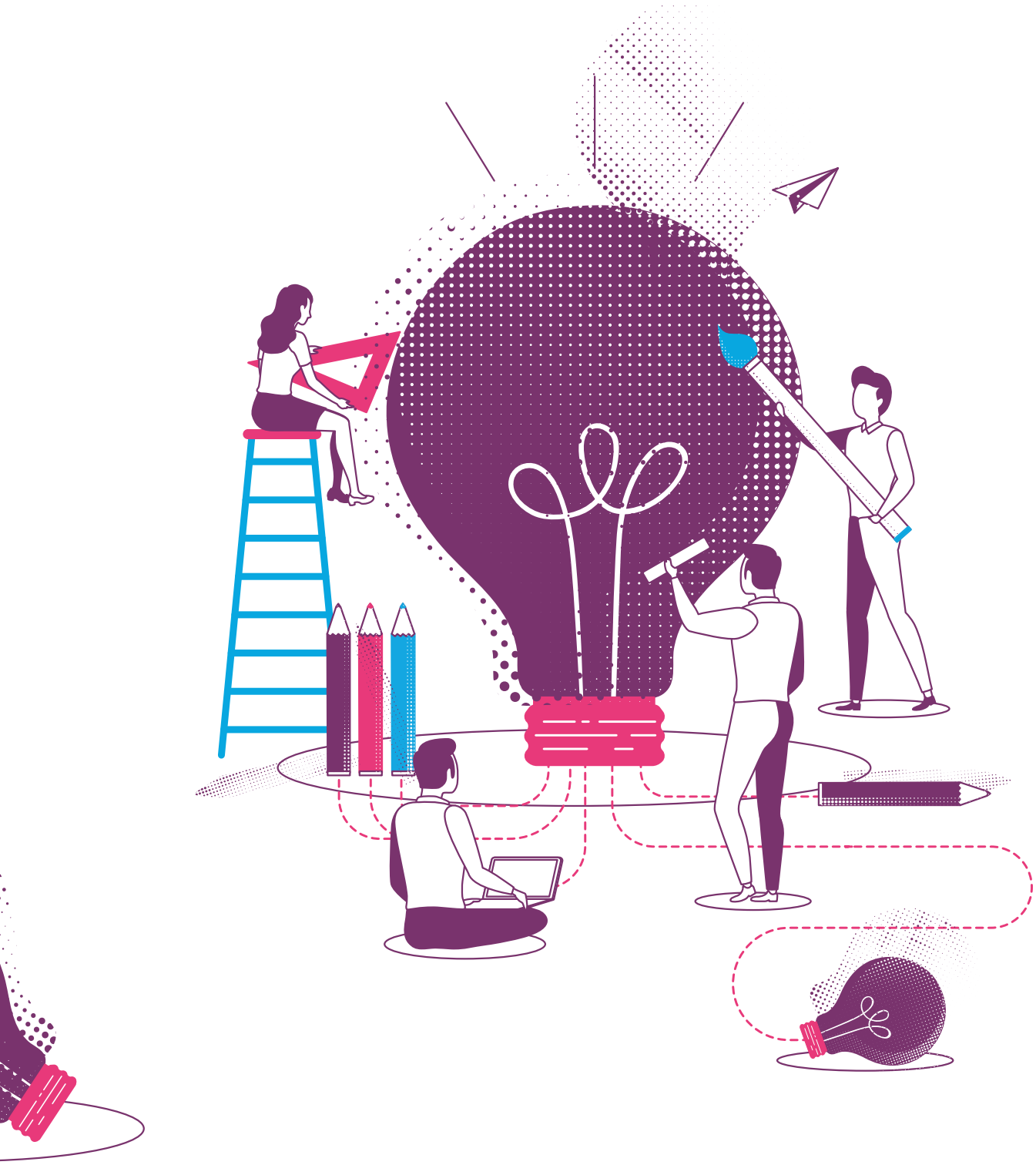
Implementing a pilot project:

- **Find project implementation staff** (students, supervisors, researchers, or other), who will undertake the research and other related activities;
- **Implement and review the first project** (perform the research or other planned activities, undertake project evaluation, identify lessons learned and refine your Science Shop model);
- **Communicate about the project and its results** to contribute to the further development of the Science Shop.

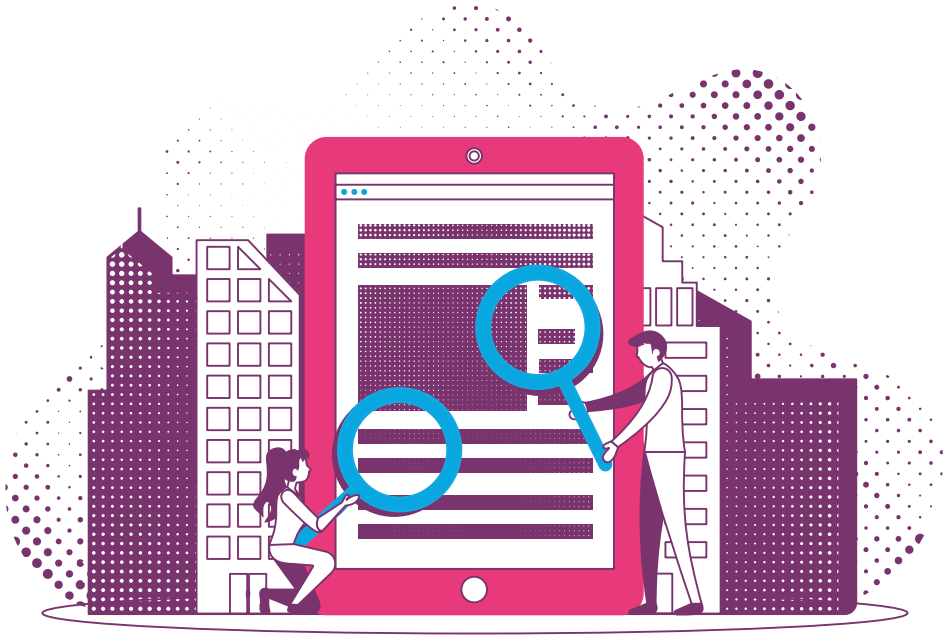
Drawing upon the lessons learned from the first pilot project(s), you will be able to refine your Science Shop business model, e.g. in terms of the type of staff you require for coordination and implementation, how you involve students, interns or supervisors in projects, if you need to set up an advisory board or scientific committee to help you select and refine the research questions; etc. More information about these aspects can be found in the following chapters of the guide.

02

Basic questions: what and why



What is a Science Shop?



Science Shops

are organisations that make knowledge available to civil society organisations that don't have the means to pay or perform research themselves. Science Shops can be embedded within other organisations (universities, research institutions, companies) or established as independent organisations in the form of non-governmental or other not-for-profit organisations.

A key element that distinguishes Science Shops from other knowledge transfer mechanisms is the fact that Science Shops respond to civil society's needs for expertise and knowledge by conducting community-based participatory research (CBPR). CBPR is a way of organising research whereby researchers work together with non-governmental organisations, communities and other groups of society to co-create new knowledge or understanding about community issues. The new knowledge can later be used to attain change in the community.

Usually, Science Shops work on research questions free of charge, although in some cases CSOs may contribute some financial resources. The most important aim is to create fair and supportive partnerships with civil society organisations and work on a participatory and mutually beneficial basis.

Science Shops also sometimes out carry out other types of projects, developing services or products, educational initiatives or facilitating other types of stakeholder engagement or dialogue that seek to achieve societal impact.

Why should we have a Science Shop?

Science Shops are a concrete form that enables scientific organisations, such as universities, research institutes and others to exercise their responsibilities to society. Science Shops are vital in this day and age because of the increasing number of pressing issues that require research efforts more than ever. This is partly to do with phenomena such as climate change, the ageing population, health dangers, resource constraints, doubts about the veracity of digital information, etc. All these are urgent matters that require deeper and more extensive knowledge in order to be addressed effectively. More than ever, this strengthens the obligation of universities and other organisations to support community organisations that deal with these issues, as well as the general public that is being asked to take part in decisions. Also, policymakers need a sound evidence base and public inputs in order to address these challenges.

From the more pragmatic perspective of a university or other organisation running a Science Shop, Science Shops offer a way to enhance student education by supplying students with real-life problems as study objects, to implement and demonstrate the "third mission", to strengthen their reputation in society, alongside other benefits. These positive effects apply also to individual students and researchers who take part in Science Shop projects. Specific benefits to the involved sides are listed below.

Benefits of having a Science Shop for:

(partly based on Mulder et al. 2006)

Universities:

- Problem-based learning
- Contribution to the development of university curricula and research
- PR and social responsibility
- The “third mission”

Companies:

- PR and social responsibility
- Networking

Research institutes:

- Development of new research directions
- New relationships with civil society
- PR and social responsibility

Non-profit organisations:

- Contribution to societal development
- PR and social responsibility
- Networking

Benefits of being involved in a Science Shop for:

Students:

- Enhanced learning
- New skills (e.g. joint problem definition, working on real-life issues, communicating, planning) and employability
- Credits for courses

Researchers:

- Case materials for either future publications or further theoretical analysis
- Networking
- Professional development (getting experience in CBPR and other skills)
- Science communication

What do Science Shops do?

Science Shops mostly run projects on behalf of communities and CSOs. Occasionally, they can also deal with requests from other organisations (companies and government institutions), if they have a wider societal relevance. In serving communities and civil society organisations, Science Shops can perform a wide variety of project activities. Which of them dominates depends on the organisational model of the Science Shop, the available expertise and the particular interests of the individual Science Shop. A project may consist of a variety of activities.

Main types of activities run by Science Shops:

- **Research.** Research is the most common type of activity undertaken by Science Shops. With research projects, Science Shops respond to the research needs of community organisations. Research projects involve formulating the research question, research design, data collection, data analysis, interpretation and potential recommendations. The level of involvement of the community organisation or citizens depends on the nature of the project.

- **Services/products.** These kind of projects focus on consultation work for community organisations (e.g. legal or business development advice) or result in a tangible or practical output like technical products, feasibility studies, the development of a website, apps promotional materials and campaigns, videos and visual identities for community organisations.

- **Stakeholder engagement.** Science Shops projects can involve civil society and public engagement activities such as roundtable discussions, focus groups, world cafés, which facilitate dialogue between different stakeholders to gain a better understanding of societal problems, inform agendas etc.

- **Educational activities.** Some Science Shops focus on educational programmes combined with public engagement activities. These are carried out with and for the community with the aim of transformative change. Educational activities can be provided as classroom activities (experimental workshops, courses and seminars) and/or educational resources (e.g. videos, virtual experiments, online serious games, games to engage young people in a dialogue, experiment protocols, teaching guides).

Main types of activities run by Science Shops:

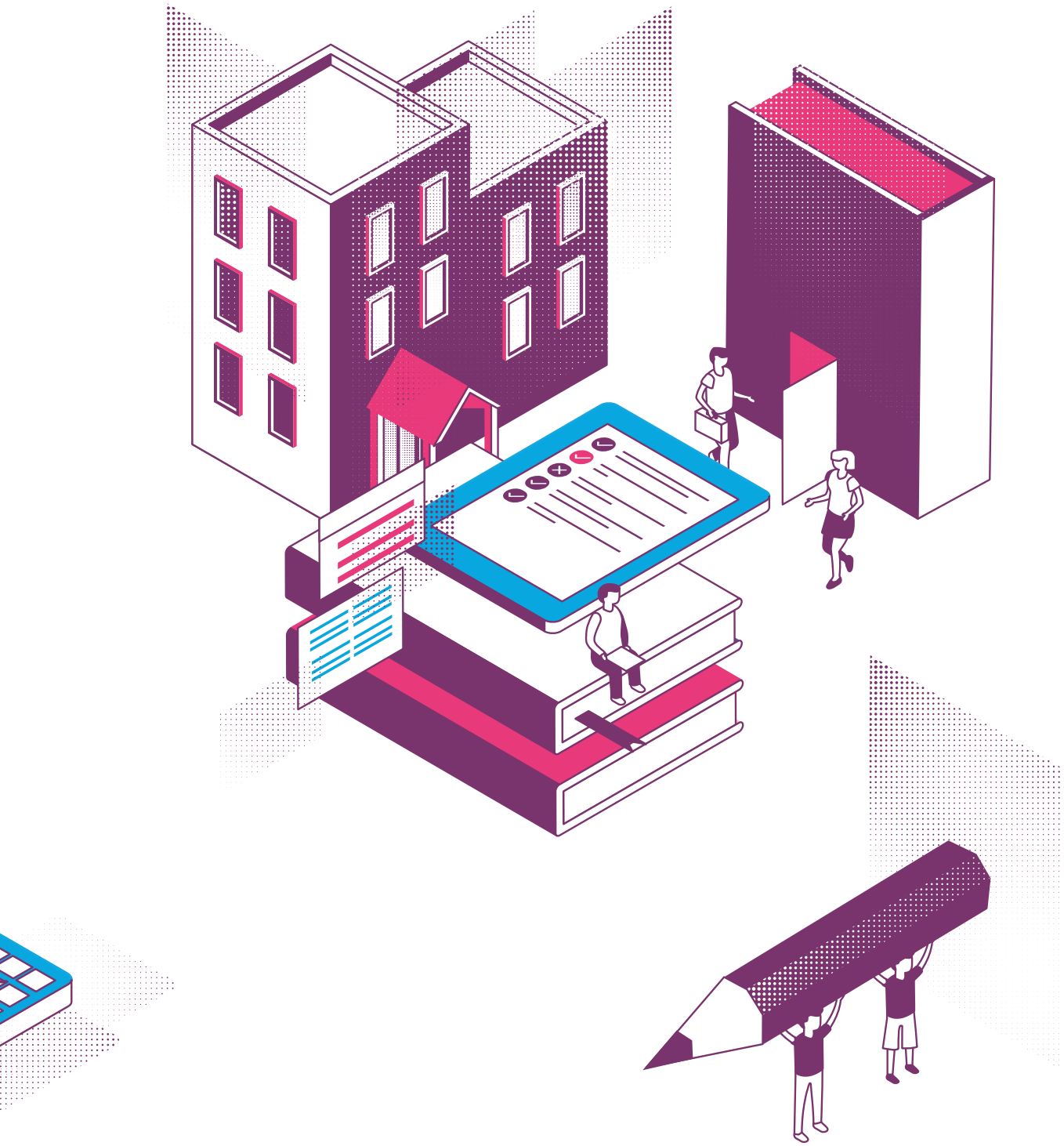
- **Universities.** The most common types of projects run by university – based Science Shops are research and services/products, because the aim of university – based Science Shops is related to the needs of students' learning and requirements of coursework and theses. Research is a suitable type of project for most of the disciplines taught at universities, while services/products development would be more suitable for students in design, engineering and similar disciplines. Universities are less likely to use stake-holder debates or educational activities as the main activity of students undertaking scientific projects, as they require special expertise, expert facilitation, etc.

- **Research Institutes.** Due to their expertise, Science Shops run by research institutes are most likely to run research projects. However, some may also focus on stakeholder dialogue and engagement, and educational activities.

- **NPO and companies.** These Science Shops could run any of the types of projects, depending on their expertise.

03

Organisational structure of the Science Shop



What types of organisations can run a Science Shop?

When starting a Science Shop, a crucial decision related to the organisational structure is:

- **Will it be a subsidiary/ part of an existing organisation?**
- **Or will it be an independent institution?**

If a Science Shop is established as a part of an **existing organisation** (mother organisation), it may be based on a number of different types of institutions:

- University. Within the university, a Science Shop might be centralised (i.e. mediate research across the entire university) or faculty specific.
- Research institute
- Non-profit organisation
- Company

A Science Shop also can function as an **independent entity**. In this case, Science Shops are mostly registered as some type of non-profit organisation (NGO, charity, etc., depending on what is most suitable in a given country).

If a Science Shop is based at a mother organisation, it is often branded and marketed as an entity, but, in fact, the legal entity is its mother organisation, through which staff are employed and finances are handled.

To date, probably the most common type of Science Shops are university Science Shops. There are also a number of Science Shops run as independent NPOs or by NPOs, as well as by research institutes. Currently, with the SciShops project, the possibility of running Science Shops at companies is being investigated.

Differences between types of Science Shops:

Being **based within a university or other organisation** provides the Science Shop with access to additional support and resources. The mother organisation is often able, at least partly, to subsidise the Science Shop's costs. The Science Shop may also have access to other expertise and support staff within the mother organisation, such as financial management, marketing and communications and administrative support. It can benefit from its mother organisation's visibility and reputation in terms of branding. However, particularly at NPOs and companies, the Science Shop's capacity may be limited in terms of the number of research projects it can carry out, because it needs to compete with other projects and demands within the organisation.

The main advantage of being an **independent entity** is freedom in terms of how the Science Shop is run. However, independent Science Shops are fully dependent on external funding sources and have no access to support or resources from a mother organisation. They also must take full responsibility for fulfilling legal duties such as financial reporting and accounting.

The decision between being based at a mother organisation or being independent is a trade-off: the benefits that one organisational form brings come at a cost in other aspects. For most Science Shops the decision cannot be arbitrary, as it is mostly driven by the background of those driving the establishment of a Science Shop within the organisation that they work in. However, there are cases when unsuccessful attempts to establish a Science Shop within a larger mother organisation lead to a decision to establish an independent Science Shop (e.g., Bonn Science Shop in Germany or Institut für gesellschaftswissenschaftliche Forschung, Bildung & Information (FBI) in Austria). An important point here is that there are different ways to establish a Science Shop, if there is the motivation to do so.

Anyone with the time, commitment and some basic resources can establish up a Science Shop. The initiative for setting up a Science Shop usually comes from individuals, either within or outside an existing organisation, who recognise the benefits of community-based research.

Where should we locate the Science Shop?

Can we have a virtual Science Shop?

Not all Science Shops have a dedicated physical office, where 'clients' can pop in at any time. This is more necessary for larger Science Shops. Smaller Science Shops that employ part-time staff and do not have many projects often get by working from existing workspaces within the mother organisation, such as their own offices and meeting rooms. Physical space is needed for meetings with clients and meetings for project teams.

Where are these spaces located? For Science Shops based at a mother organisation, the obvious option is to locate the Science Shop there. In many cases, mother organisations can afford not only to share office space, but also other infrastructure and supplies with the Science Shop.

Science Shops that function independently from a mother organisation might need to rent or acquire office space, or share an office and supplies with other organisations. If this is not possible due to funding or other reasons, independent Science Shops sometimes share a building with NPOs or charities, either in government-owned buildings or buildings owned by one of the organisations.

Small independent Science Shops may choose not to operate from any centralised location. In this case, staff members can manage the Science Shop working from home or offices at their permanent jobs.

Online Science Shops

Recently there are emerging examples of virtual "e-Science Shops" that intend to manage almost all of their projects and communication online. One example is the Universitat Oberta de Catalunya (UOC) in Spain, a completely online university, that is experimenting with the incorporation of an e-Science Shop (UOC Science Shop) in the general operations of the e-university.

The advantage of these online platforms is that they require little funds and can be accessed by everyone from any place and at any time. The disadvantage of virtual platforms is the lack of personal contact between the staff and the client, which requires greater effort to sustain relationships.

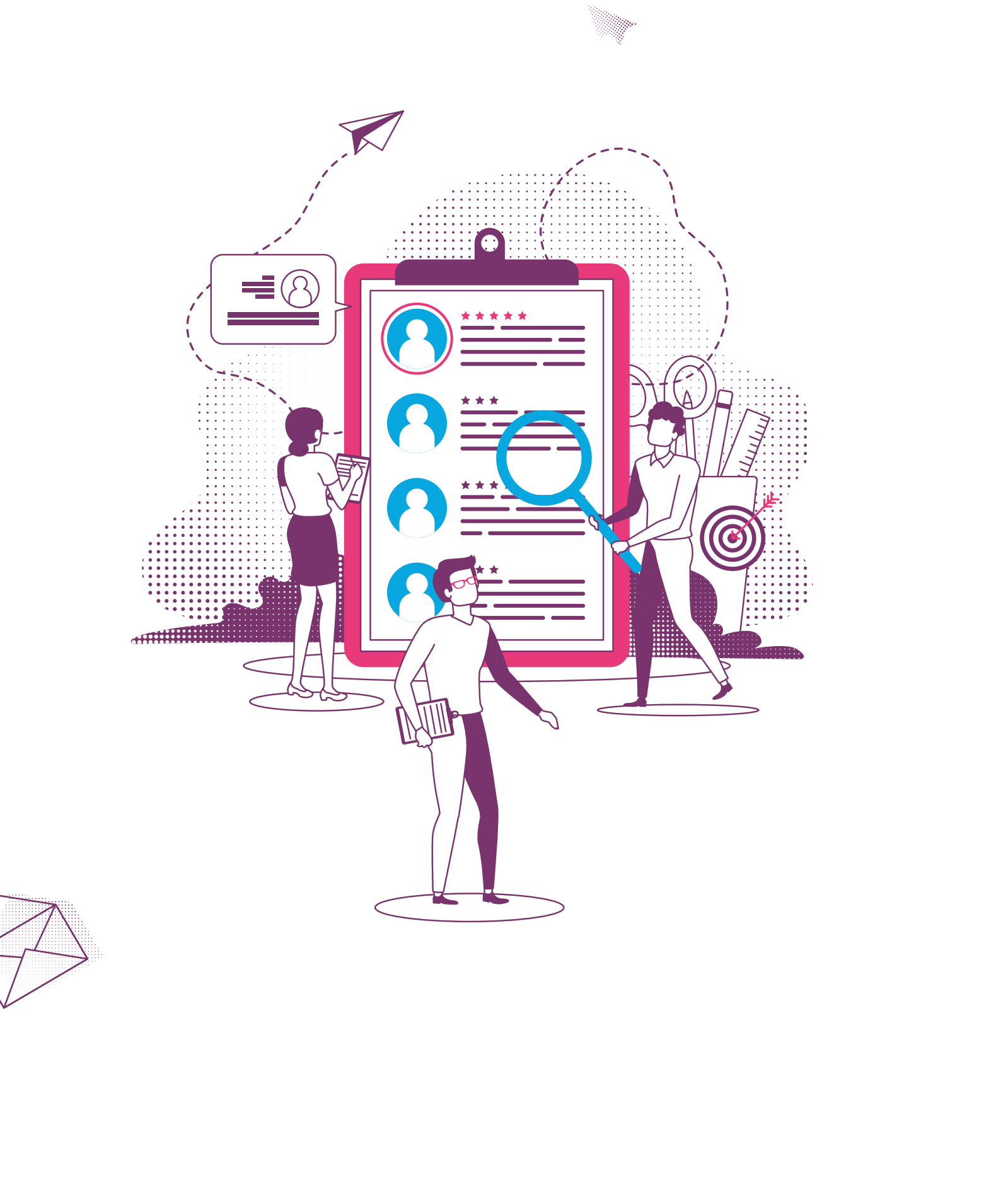
Can we set up a pop-up Science Shop?

Not all Science Shops are established entities that run projects on a regular basis. Temporary Science Shops, also known as pop-up Science Shops, can be a useful model for those that wish to pilot the concept of a Science Shop at their organisation. Pop-up Science Shops can take a variety of formats. One example is the pop-up Science Shop run at Malmö University (Sweden), which was piloted twice during 2017 as part of a regional social innovation project involving a number of partners. The idea was to prototype a Science Shop that was less connected to a physical space or one institution. Four staff at Malmö University has been involved in driving the project forward; however, they do not have formal roles but function more like an informal network of people facilitating the initiative. The model involves inviting CSOs to a series of meetings to turn challenges into research questions, which are subsequently narrowed down and formed into concrete collaborations.

In other cases, pop-up Science Shops can be used as a vehicle for public engagement with science. They are run as public engagement events (exhibitions, science cafés, etc.) on a certain topic, with the aim of initiating dialogue between researchers and the general public, exploring whether researchers' work is of interest to members of civil society, or soliciting research requests directly from citizens. An example is the pop-up Science Shops that ran alongside an exhibition during the EU-funded SPARKS project (2015–2018) (see: http://www.sparksproject.eu/articlenews/would-you-science-espresso-or-pop-science-shop).

04

Staffing the Science Shop



What is the management structure of a Science Shop?

Science Shops can have different management structures, which mostly depend on their size and organisational model (independent vs. mother-organisation based Science Shops).

Any Science Shop will need at least one **coordinator**, who is usually responsible for the overall management of the Science Shop, including soliciting requests from CSOs and coordinating the implementation of the projects. If the Science Shop employs additional staff for various coordination and administrative functions, it might need to have a **director** or other type of senior coordinator to coordinate the work of the staff, be responsible for decisions and formally represent the Science Shop.

Some Science Shops have a **management board** (often called a scientific committee at a university), which acts as the main governing body of the Science Shop. The board makes decisions regarding what projects to undertake and other issues related to the running of the Science Shop.

Larger Science Shops often have an **advisory board** on which sits representatives from both internal and external stakeholders: including the mother organisation, student organisations, community organisations, universities (in the case of a collaboration between an independent Science Shop and local universities), governmental institutions. Advisory boards act as an advisory, and sometimes, supervisory body; however, they are also helpful in developing a Science Shop's network, as its members' contacts may be used by Science Shops to solicit research requests and facilitate the involvement of other stakeholders.

Small Science Shops might have an **informal management structure** without formally appointed directors or other management structures. This is particularly common during the piloting stage of a Science Shop, as well as in small Science Shops mostly run by volunteers.

Who coordinates the Science Shop and its projects?

Science Shops can be organised in different ways, but all of them need some coordination and administration efforts: management of the overall operation of the Science Shop (finances etc.), coordination of projects and research staff, carrying out communication and promotion tasks. Depending on the organisational model and the size of the Science Shop, the coordination team might consist of a single coordinator or a team.

Science Shops have several options for coordination staff:

- **Part-time role within the mother organisation.** One of the options for Science Shops is to assign the task of coordinating Science Shop activities to staff already employed at the mother organisation in other positions. This is particularly common at universities, but it is also an option for other organisations. At universities, coordination roles at Science Shops are sometimes performed by lecturers/researchers, who often do it as a part-time job alongside their everyday lecturing and research work, or employees with other administrative roles, such as policy officers.

- **Dedicated hired staff.** Depending on the size of Science Shop and available financial resources, a Science Shop can also hire employees to specifically coordinate Science Shop activities and perform other administrative tasks. They can be employed full – time or part-time, but the difference from the option above is that they do not have other positions at the mother organisation.

- **Students.** Due to a lack of experience, students are not likely to be responsible for the main coordination and project management tasks at Science Shops. However, they might be engaged in communication and promotion activities or as assistants. They might work at Science Shops in paid assistant positions, in paid or unpaid internships, or might be rewarded with study credits. NPO and business-based Science Shops could also involve student interns for administrative or technical work.

- **Volunteers.** There are Science Shops that are partly or entirely run by volunteers, who also undertake management tasks. This is a more common option at newly established Science Shops, but also established Science Shops can involve volunteers.

Differences between types of Science Shops:

- **University Science Shops.** At universities, Science Shops are normally coordinated by part-time university staff (lecturers, researchers, administrative staff) or dedicated hired staff. It mostly depends on the size of the Science Shop and its funding. Science Shops might also involve students in some positions.

- **Research institute-based Science Shops.** Similarly to universities, a Science Shop at a research institute will be most likely to be coordinated by part-time staff at the institute or dedicated hired staff.

- **NPO-based Science Shops.** Science Shops that function as independent NPOs are coordinated by employees of the NPO either on a full or part-time basis, depending on the size of the organisation. Science Shops that are a part of an NPO are usually coordinated by the NPO's employees on a part-time basis. The NPOs might also involve volunteers in coordinating positions.

- **Company-based Science Shops.** They are most likely to be coordinated by the company's employees, who will do it as part-time work alongside their main duties.

Options for coordination staff have their advantages and disadvantages, which you should take into consideration when deciding who will coordinate the Science Shop:

- **Part-time mother organisation staff**. The advantages of using part-time staff are inside knowledge of the organisation, good knowledge of the research process (if lecturers/researchers), and lower costs. The main pitfall is potential difficulties allocating time and combining the coordination role with other positions.

- **Dedicated hired staff.** The advantage of this option is that you can employ staff with specialised skills relevant to the specific roles, who can give their undivided attention to the Science Shop. The main disadvantage is the higher cost.

- **Students.** The advantages of this option are lower costs and communication potential (they can be good ambassadors of a Science Shop within the student community). Disadvantages are possible lack of experience, high turnover, and difficulties combining work with studies.

- **Volunteers.** The advantages are economic benefits and the intrinsic motivation of volunteers. Disadvantages include possible lack of experience, the limited time that volunteers can devote to unpaid work, as well as potentially higher turnover, compared to permanent staff.

Who implements a Science Shop's projects?

One of the key aspects related to the establishment, running and expansion of Science Shops is the project implementation staff, as the availability of these individuals affects how many, and what types of projects the Science Shop will be able to undertake. However, the people who will implement the projects do not have to be hired and paid staff – there are numerous other possibilities.

Precisely because of the availability of 'free' staff, many Science Shops can offer free services to community organisations.

Typically, the project implementation team consists of a project coordinator or supervisor, and the people who carry out the actual research or other project activities, that is, those who collect and analyse the data and do other associated tasks.

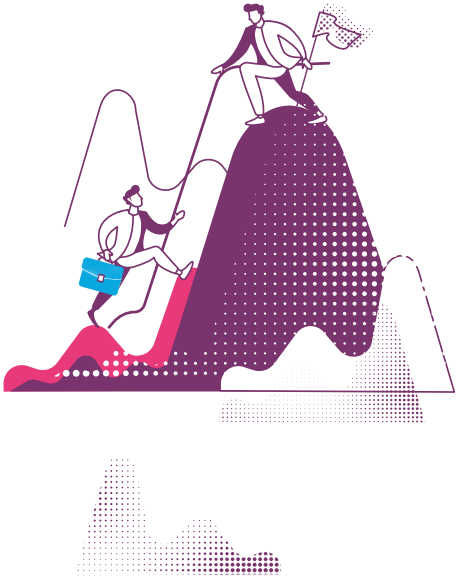
Science Shops have several options for project implementation staff:

- **Students.** At all types of Science Shops, research projects are most typically implemented by students. Their work with projects on behalf of community organisations may take several forms: a final bachelor or master (BA, BSc, MA or MSc) thesis; a piece of coursework integrated into a course on research methods or a subject-related course; or an internship. Being able to engage students in projects is a general advantage for many Science Shops – without this 'free' and abundant resource, operation of many Science Shops would be impossible. NPO or business-based Science Shops may also have partnerships in place with universities through which students are engaged to implement the projects.

- **Lecturers/researchers.** University lecturers or researchers typically act as supervisors of Science Shop projects that are carried out by students. In many cases, university lecturers do this without extra payment as student supervision is a part of their job. However, such projects may involve extra work, time for meetings etc. Hence some universities might opt to allocate extra remuneration for lecturers taking part in Science Shop projects. Some Science Shop projects can be entirely implemented by researchers with experience instead of students, particularly more demanding or sensitive research, although this is less often. Projects carried out by researchers often require some kind of funding too.

- **NPO/business company's employees.** At NPO or business-based Science Shops, its employees not only coordinate the projects, but also supervise the research projects if they are implemented by intern students, or implement the projects themselves.

- **Volunteers.** It is not uncommon for Science Shops to be established by volunteers or rely heavily on volunteering work at the beginning of their existence. However, a small number of Science Shops continue to be run by volunteers. All Science Shops at all stages of maturity may rely on volunteer researchers and students from universities and other research institutions.



- **Other options.** There are several other but less frequently used options for the implementation of Science Shop projects. In some projects, the staff of the community organisation is involved in the project implementation, e.g. taking part in the research design and helping to collect data. Another example are projects based (partly or entirely) on citizen science, when lay people from the wider society are invited to contribute to the project with data collection or analysis, thus becoming involved in the project implementation. Science Shop Advisory Boards may also have some form of a supervisory role.

Differences between types of Science Shops:

- **University Science Shops.** Universities have ready access to students and researchers to implement and supervise projects. Science Shop projects are mostly implemented as theses or coursework.

- **Research institute-based Science Shops.** Employed researchers often supervise the Science Shop projects, or may implement the projects themselves. Research institutes may involve students as interns or rely on some other form of collaboration with local universities.

- **NPO-based Science Shops.** Projects are implemented by the NPO's staff or student interns. If students are involved, projects are supervised by the NPO's employees. Some NPOs also rely on volunteers, particularly during the establishment phase. Alternatively, an NPO may have a partnership with a local university whereby students undertake the projects.

- **Company-based Science Shops.** They are most likely to involve intern students, under the supervision of the company's employees. Another option for a business-based Science Shop is to have a partnership with a local university whereby students undertake the projects.

The choice of staff to implement the projects depends not only on the availability of options, but also the benefits and disadvantages associated with them:

- **Students.** The main advantage of involving students is that there are many of them and they are 'free', because they mainly take part in the projects without any financial reward. One of the disadvantages relates to potentially conflicting timescales and the availability of students undertaking a course related to the topic, or students being interested in taking a research request as a topic for their thesis. Even if students are available, the project timescale must be aligned to the study cycle. Another disadvantage is the risk of lower quality research, related to the students' lack of experience as well as the risk of project abandonment due to personal or other reasons.

- **Researchers, NPO or company employees.** The advantages are high quality work and no further need for academic supervision, while a disadvantage is the higher cost (compared to using students or volunteers).

- **Volunteers.** The advantages of involving volunteers are cost savings and their intrinsic motivation. The disadvantages include the possible lack of experience, the limited time that volunteers can devote to unpaid work, as well as a potentially higher turnover compared to permanent staff.

How to work in a higher education setting?

If your Science Shop is based at a university or involves implementation staff from higher education institutions, you need to pay attention to some of the peculiarities of running projects as part of higher education:

- You will need to adapt the project timescales with study cycles. It will be difficult to implement projects during the summer holidays or exam times. You also need to take the duration of project into account – a course assignment needs to be simpler and shorter than a project undertaken as part of a bachelor or master (BA, BSc, MA or MSc) thesis.

- You might need to reformulate or split the requested research topic into smaller research questions, in order to adapt them to the format and requirements of the coursework or thesis;

- You need to bear in mind that sometimes the Science Shop will not be able to implement all research requests if there is no student who is interested in the topic, or the requested topic does not fit the curricula.

- You will need to develop a system for rewarding and motivating student participation in projects (e.g. ensuring that they receive study credits, providing awards, inviting them to participate in conferences or seminars, providing opportunities and support to publish papers, etc.);

- Similarly, you will need to develop a system to involve and motivate lecturers and researchers. For example, you could organise a discussion among interested researchers and lecturers on how to promote CBPR within their higher education institution, involve them in decision making from the very beginning of the operation of the Science Shop; invite them to initial meetings with CSOs; organise courses or guides on how to involve CBPR in the teaching process; lobby for the inclusion of CBPR in the reward system for lecturers; or come up with other initiatives appropriate to your own institution.

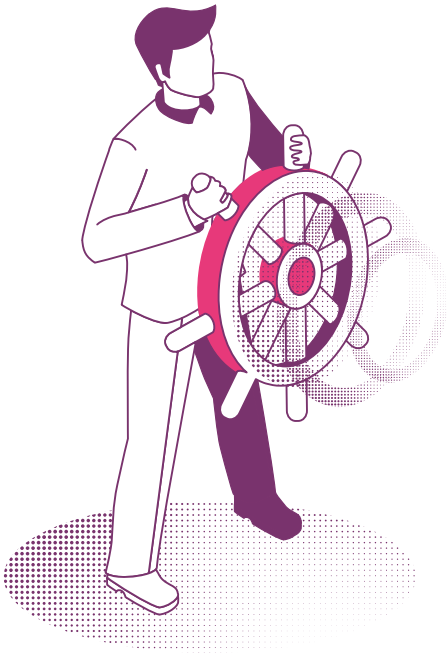
05

Implementation and management of Science Shop projects

What is the role of the Science Shop coordinator in a CBPR project?

The main types of projects implemented by Science Shops are community-based participatory research (CBPR) projects. CBPR projects are run in a similar way to any other research project, the only difference being that the project is based on a request from a CSO and therefore the organisation that provided the research request (the 'client'), as well as other stakeholders, are closely involved in the project implementation. In fact, the same can be said about other types of projects run by Science Shops – they are implemented in a similar way to other projects, only with the closer involvement of stakeholders.

Although Science Shop coordinators require a general knowledge about the research process and its steps, their role is mostly related to mediation between the client organisation and researchers. The main steps of actual research – choice of research methods, data collection and analysis, data interpretation – is left to the competence of project implementation team (supervisor and student(s) or researcher(s)).



The Science Shop staff usually has to perform the following tasks:

(based on Mulder et. al[1])

1. Organise a first meeting with the client to understand the problem and collect relevant questions/problems.

2. Do some preliminary research or contact an expert in the field (possibly, a potential supervisor for the project) to see if the question has already been answered and if there is any societal relevance. Then reformulate the client's question into a research question possibly with the support of the supervisor or a scientific committee.

3. Organise a second meeting with the client together with students, supervisors and relevant expert(s) and possibly local stakeholders to discuss existing research results, to agree on the research question, to explore limitations and expectations of all stakeholders.

4. Find a suitable supervisor for the research project. The supervisor can be from a local university or research organisation. It is important not only to define the research questions but also find a suitable researcher willing to lead the research project.

5. Find students or researchers to work on the research project.

6. Support communication between the client and research group (organise follow up meetings to update on process, to plan for reporting and dissemination).

7. Prepare or support students to prepare a presentation of the results both for stakeholders and to the wider public. It could be a presentation, interview, report, brochure, website, article, etc. Support dissemination of the project results.

8. Make an inventory of follow-up research or research themes. See if there is a possibility for scientific publication, interesting themes for further research.

9. Undertake the project evaluation together with the student, supervisor and client.

10. Support the client in implementing results and recommendations, and undertake project dissemination.

1. Mulder, H. A. J., Jørgensen, M.S., Pricope, L., Steinhaus, N. and Valentin, A. (2006). Science Shops as Science – Society Interfaces, in Interfaces Between Science & Society, ed. by Pereira, A.G., Vaz, S.G., Tognetti, S., Routledge: London and New York.

What has to be discussed when starting a CBPR project?

In addition to defining the research questions, there are a number of other practical issues that need to be discussed between the Science Shop and the CSO with the aim of developing a shared vision and mutually determined goals and processes:

- What are the time constraints for the research?
- Does the CSO have any budget available to pay for any costs associated with the Science Shop project? This could range from reimbursement of travel costs to much larger budgets for carrying out an extensive survey.
- What support can the CSO provide in terms of human and other resources? Who within the CSO will be the main contact, how much time do they have?
- What form will the outcome of the research take? What would be of most benefit to the CSO?
- Communication activities – does the CSO have communications expertise that can benefit the project? Initial discussions can also be held about possible communications activities during and at the end of the project (see Communications section for more details).

In these discussions, the Science Shop also needs to clearly manage the expectations of the CSO in terms of what can be achieved. If students are undertaking the research as part of coursework, there is no guarantee that the end piece of work will completely meet the CSO's needs. It may also be impossible to guarantee the quality of the research and there is even the risk that student will drop out, although good supervision, established project management and quality management procedures, and clear communication can all help to minimise the risk of this happening.

How do you establish a good relationship with the CSO?

In order to get to know the client CSO, sufficient time should be allowed at the start of the project for the person(s) undertaking the project to get to know the CSO, the community's needs and the issue being addressed. This may mean the researcher spending time with the CSO, attending meetings, visiting projects and people affected by the issue. Relationships between CSOs and researchers need to be based on trust and mutual understanding, which takes considerable time to establish. Success factors include openness and transparency, excellent ongoing communication, and an understanding that different types of organisations work in different ways. Some CSOs may find a researcher's working environment intimidating so consideration should be given to where meetings are held.

Do we need a formal research agreement?

Once everything has been discussed, the key points need to be formalised in a contract, which can take the form of a research agreement form. It is best practice for Science Shops to write contracts for all of the projects that they undertake in order to set out each party's responsibilities and to manage expectations. Examples can be found in the Living Knowledge toolkit (https://www.livingknowledge.org/resources/toolbox/).

Key points to be addressed include:

- Roles and responsibilities
- Research to be carried out and the way it will be carried out
- Timescales, resources and expenses, provision of equipment
- Data collection and storage
- Ownership of copyright or any other intellectual property rights
- Publication agreements e.g. open access
- Frequency of meetings and communication

What project management procedures should we set up?

Setting up robust project initiation and management procedures right from the start and developing standard templates for use throughout the project helps to ensure the smooth running of a project. Aspects to be considered include project scoping, brief development, project management timelines, planning, project monitoring and formal evaluation and feedback. Project management procedures should be regularly reviewed and evaluated so improvements can be identified (see section on impact and evaluation).

Standard template documents could include:

- **Research agreement**
- **Planning documents**
- **Communications plan**
- **Evaluation questionnaires**

How should ethical considerations be taken into account?

Ethics and research integrity is an important part of the research process that needs to be seriously addressed by Science Shops and all Science Shops should have clear guidelines to support responsible research practices. Science Shops also need to ensure that sufficient time is allocated for ethical review processes. Some Science Shops have specific ethical frameworks and review processes for their community research projects, particularly those based at universities that may be initiating a large number of projects at the same time. Those Science Shops that do not have specific ethical frameworks, should adhere to ethical frameworks used at universities or other mother organisations, or to general research ethics.

How do you ensure the quality of Science Shop projects?

One of the biggest issues for Science Shops is quality management of the research, especially in cases when research is undertaken entirely by students, interns or volunteers. The quality of research is usually one of the reasons why NPOs and community organisations are sometimes sceptical towards requesting research from Science Shops. However, Science Shops have developed ways to ensure the quality of research.

One of them is to give others, besides those implementing the research, specific roles in the project management:

- **Supervisors.** When research is entirely carried out by students, interns or volunteers, it is important to ensure that their work is supervised by an experienced researcher, which could be a lecturer at a university or other higher education institution, or someone from the Science Shop staff with experience in research. It is obligatory in cases where a Science Shop project is undertaken as a part of an educational course in which students receive course credits.

- **Advisory board.** Establishment of an advisory board for CBPR projects, which involves a range of stakeholders, can also improve the quality of research by developing consensus on the research question, methods of investigation, and data interpretation.

- **External stakeholders**, especially civil society organisations, which supply the research requests. Their participation in all research activities (formulation of the research question, creating research tools, collecting and analysis of data, interpretation of results) can validate the conclusions and result in better and more appropriate recommendations.

- **Consultants**. Where there is a specific gap in knowledge (on the research topic or methods, or otherwise), it could be worthwhile involving external consultants with expertise in the issue, who could provide advice on the issue, help to solve the problems arising and answer research related questions (e.g. a professional organisation or other professors with expert knowledge of the topic). For example, consultants could be invited to sit on a project advisory committee.

Aside from the quality of research, it is also important to ensure the quality of the whole project management. Science Shops should establish quality management processes and failure procedures so that any problems can be identified and resolved as early and quickly as possible.

There are at least three ways to achieve this:

- **Regular communication** among those involved in the project implementation. Such communication is an indispensable part of any project management process. This may require weekly or biweekly face-to-face or online meetings, depending on the need; sometimes there is a need to communicate more frequently than at other times. Regular communication meetings can be a useful opportunity to plan and discuss activities as well as provide feedback to the coordinator.

- **Use of disclaimers**, which can be included in the contract and project reports to say that while every effort will be taken to conduct the work to the highest quality, the Science Shop gives no warranty as to the accuracy of the work undertaken or suitability of any material produced.

- **Evaluation of project management**, which can be internal (performed by the project team) and external (performed by someone outside of the team) and can use quantitative and qualitative approaches. This question is addressed in more detail in section 10.

06

07

Funding the Science Shop

How do we fund the Science Shop?

When setting up a Science Shop, one of the first and foremost aspects to consider is potential sources of funding for the Science Shop's daily operations. In order to set up a long term sustainable organisation, the Science Shop needs a reliable and continuous source of funding. This is often the main challenge, both for early and more established Science Shops. The two main funding sources for Science Shops are dedicated funding from a mother organisation and project funding, but there are also other options to take into consideration:

- **Mother organisation funding.** This can be the primary source of funding for activities in Science Shops based at any type of organisation. This type of funding is relatively common. Crucial in this regard is convincing the board of the mother organisation to allocate funding to the Science Shop. The amount of funding does not need to be large, as small Science Shops require relatively little financial funds for their everyday activities, and a lot of work can be done as a part of the regular tasks of involved participants, e.g. students undertake Science Shop projects as a part of their studies for credits, and teachers supervise theses or projects as a part of their teaching obligations. In addition, NPOs often rely on volunteers to undertake some of the work. Mother organisations also fund Science Shops indirectly by making in-kind contributions, such as access to laboratories, libraries, communication channels, etc.

- **Project grants.** Grants might be available at the EU, national or local levels. Project grants may be used to fund the operation of the Science Shop or individual research projects. In the past, numerous Science Shops have been established as part of European FP5, FP7 and Horizon 2020 projects, and there are examples of similar funding opportunities at a national level. Science shops can also approach potential public or private partners for grants for specific research projects. However, there are often restrictions on what grant funding can be used for (e.g not on infrastructure, utilities) and the funding has a final end date.

- **Social entrepreneurship and paid services.** Science Shops generally try to offer their services free of charge, or at least at the absolute minimum cost. However, offering paid services to clients who can afford this can provide an additional source of income. Consequently, these funds can be allocated to research projects for clients who have limited resources. The most notable example is Bonn Science Shop, which finances its activities from the revenue it generates through magazine subscription sales (magazines include career guidance and job vacancies for academics within the humanities and environmental sectors), paid services, funded research and communication projects. Another example is the Ibercivis Foundation (Spain), which is partly funded by providing citizen science consultancy services. A common practice is to ask those clients of Science Shops that can afford it to contribute partly to Science Shop projects or to cover specific costs e.g. travel expenses.

- **Other funding sources.** Aside from the more common funding options, Science Shops have been creative in finding new sources of funding: donations and membership fees; private sponsorships; registering as a charity; use of opportunities within the tax system (some countries allow individuals and businesses to give a certain percentage of their taxes to an NPO or charity). However, these sources of funding usually constitute only a small part of the required budget.

For some Science Shops, particularly large or independent Science Shops, the main cost is staff salaries. However, there are also some Science Shops that manage to survive without any dedicated funding. They rely mainly on the commitment of volunteers. For instance, the European University Cyprus Science Shop receives no official funding. The Science Shop is fully integrated in the structure and everyday operations of the university, based on voluntary commitments of faculty members. Future Science Shops can also draw on innovative models such as crowdfunding or online collaborations that include the public (citizen science) and require no dedicated funding.

Differences between types of Science Shops:

- **University and research institute-based Science Shops.** These Science Shops usually receive at least a part of the needed funding from the mother organisation. They can also apply for project grants from public and private funding schemes.

- **NPO-based Science Shops.** Their most likely sources of funding are project grants, social entrepreneurship, and paid services. Small Science Shops that collaborate with universities can operate with very little or virtually no funding.

- **Company-based Science Shops.** They are most likely to be financed from the budget of their mother organisation. A limitation for these Science Shops is that they are not eligible for all financing schemes.

Each of the listed funding sources have their advantages and disadvantages, which you have to consider when planning your Science Shop model:

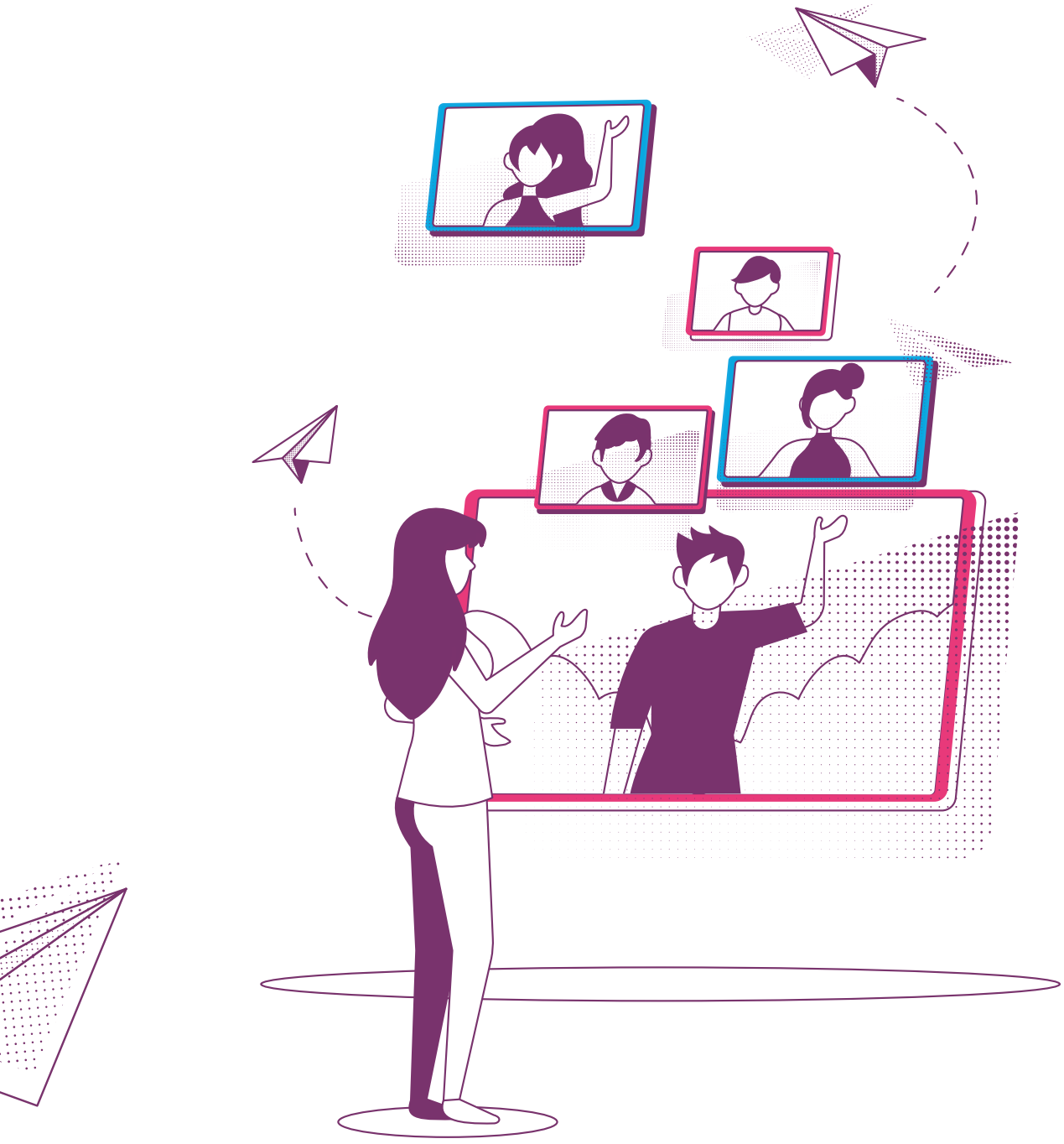
- **Mother organisation.** Benefits of this funding source are its relative sustainability and stability, while downsides are related to the dependency of the Science Shop on its mother organisation and susceptibility to its financial situation and priorities.

- **Project grants.** Project grants are extremely useful for setting up a new Science Shop, as they give financial security for a set period of time and provide the opportunity to test a Science Shop in a particular environment, as well as learn from more experienced Science Shops. On the other hand, the main disadvantage of project grants is that they are time restricted, and, once they come to an end, Science Shops have to look for new sources of funding. Searching for funding for individual projects is very time consuming; it is estimated that Science Shops can spend about a third of their time on these applications but they may allow the Science Shop to undertake much larger and complicated projects.

- **Social entrepreneurship and paid services.** The advantage of this option is that expansion of the client base of a Science Shop can raise both societal visibility and the number of research questions that can be taken into consideration. Moreover, this type of funding also reduces the dependence on external sources of funding and is therefore more sustainable in the long run. Risks related to this option include potential bias towards for-profit projects and erosion of the social function of the Science Shop.

07

'Clients' of the Science Shop



What types of organisations should Science Shops work with?

Most Science Shops work with **local communities**, **NGOs** and **other types of civil society organisations**, who have a need for a research or a new product/service, but are unable to do it themselves or pay for commissioned research. However, some Science Shops also work with **for-profit businesses** if these companies have a question with wider societal relevance. Companies need to agree for the results to be published openly and usually pay a small fee for the research, depending on the nature of the company and question to be investigated. Another type of client can be **local authorities**.

How does a Science Shop identify the needs of CSOs?

It is important to identify a pool of community/ not-for-profit organisations, which may have research or other activity requests for a Science Shop. This can be done using desk research to compile a list of potential clients from publicly available information that can be used later for contacting them. When starting a Science Shop or later, it can be useful to perform a needs analysis to better understand the potential research needs of CSOs. Some tools have been developed by existing Science Shops for undertaking a stakeholder analysis, e.g. The Living Knowledge Network provides an example of a survey to explore the interests of Civil Society Organisations, developed by the Science Shop Brussels, Belgium. This is a questionnaire that includes questions about the CSO's profile, its potential needs for requesting research from a Science Shop, and asks for contact information for future collaborations. The questionnaire is available here: http://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Dokumente_Dateien/Toolbox/LK_D_Questionnaire_needssurvey2002_2003.pdf

How does a Science Shop find and collect research requests?

Science shop projects are initiated based upon research requests from CSOs. There are several complementing ways to generate research requests:

- Promote the Science Shop through your local, regional and national communication channels (mass media, seminars, workshops, conferences, forums and other events).
- Promote the Science Shop to your local community groups, regional and national CSOs. Announce that there is an opportunity to submit questions and explain how to do it.
- Analyse topics of interest and relevance to your Science Shop in the public sphere (e.g. articles in the mass media, public discussions, forums, etc.) and actively search community organisations that might be interested in investigating the issues together.
- Develop tools for collecting questions (e.g. internet platforms).
- Create a research question database from which students or interns can choose topics for their thesis or coursework.

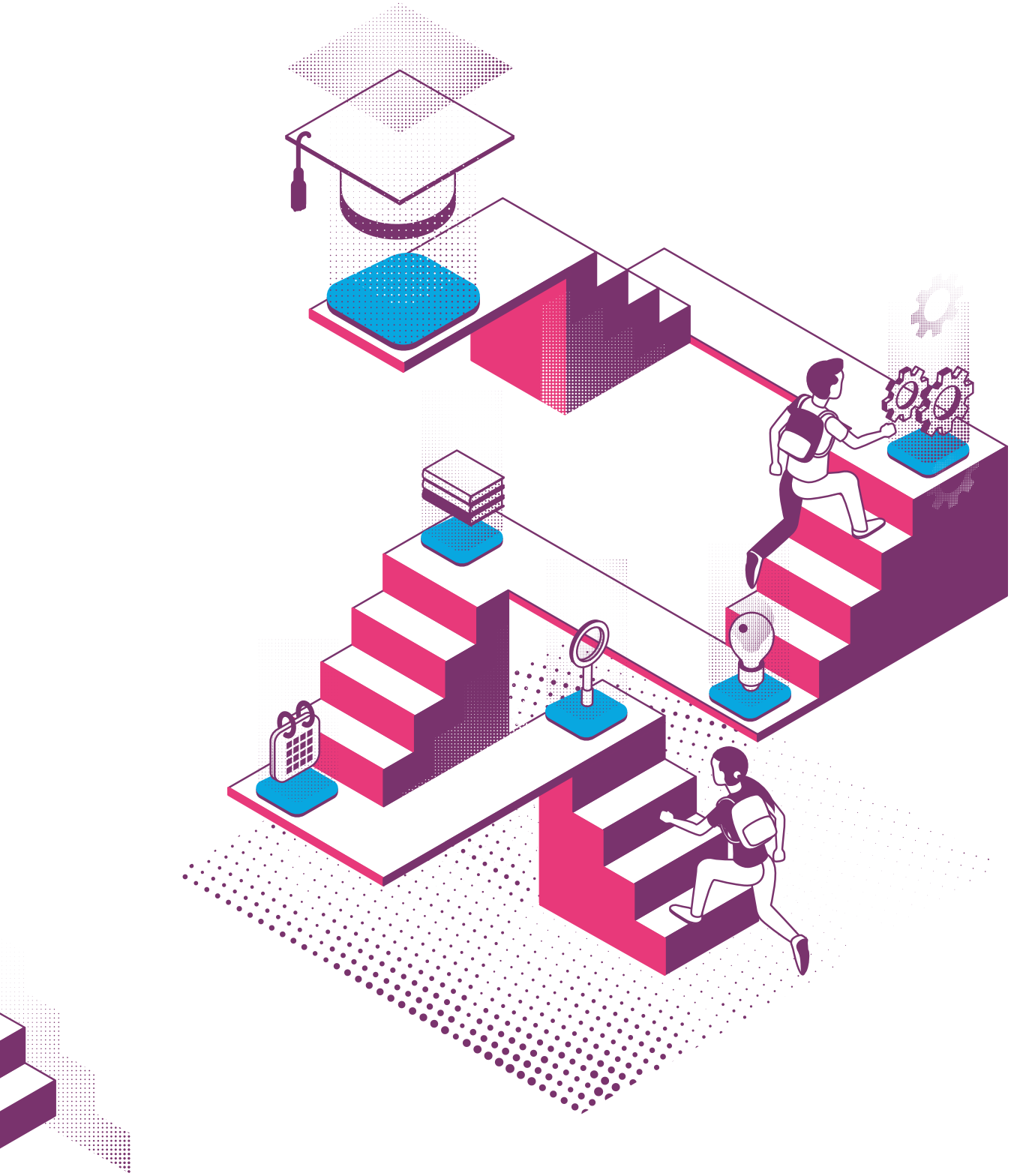
There are some general criteria for accepting a request:

- there must be a scientific element to it;
- it needs to be of wider relevance to part of the general public;
- the client must be able to use the results (but there should be no commercial interest driving the request so that the process is not seen as being skewed by a special interest);
- the results should be published with open access.

Science Shops case studies conducted within the SciShops project show that all young Science Shops initially face difficulties collecting research questions or project requests, while mature and experienced ones often no longer need to advertise their services and receive more requests than they can deal with. The social and cultural context of a country can also have an impact, as in countries where civil society is less developed, passive forms of collecting research requests are less likely to be fruitful. In this case, a more proactive approach is needed; strong personal contacts need to be nurtured and specific events for target audiences organised (e.g. co-creation events with researchers and community members) to increase success.

08

Science Shop stakeholder engagement



Who are the stakeholders of Science Shop projects?

Science Shops work with **internal** and **external** stakeholders. Internal stakeholders are individuals and groups from within the (mother) organisation, such as project supervisors, researchers, students, interns or volunteers. Even if they are mostly from the same institution as the Science Shop staff, they still need to be identified and involved in the project.

External stakeholders are those groups from outside of the organisation that are affected by the Science Shop projects, that can affect the project or implementation of its results, or are otherwise involved in project activities. External stakeholders can be grouped into four broad groups: stakeholders from civil society, the public sector (e.g. government and policy makers), the business sector, and the general public.

The main external stakeholder group that Science Shops deal with is civil society organisations (CSOs); they mostly act as the 'clients' of the Science Shop that provide research or project requests. However, a project can involve other relevant CSOs. Policy makers and other public agencies, for-profit businesses and social enterprises sometimes can be Science Shops clients, but are more frequently engaged as stakeholders that can discuss, support and sometimes help to implement project results. Involvement of these stakeholders at an early stage of the project increases the possibility of making a bigger impact in terms of project outcomes at local and even national levels. The general public is less frequently involved in Science Shop projects; however, it can also participate in different engagement activities such as focus groups, discussions, world cafés, dissemination and education events.

How do you involve community organisations and other stakeholders in project implementation?

The success of a Science Shop project is dependent on effective collaboration between many different stakeholders and involves a considerable investment in human relationships and communication. The main stakeholder of Science Shops – communities and NGOs – which submitted requests for a research or other type of project should be involved throughout the decision making and implementation of the project: from the planning, development of tools and processes, through to data collection,

data analysis, dissemination and action. Other stakeholders – policy makers and other public agencies, for-profit businesses and social enterprises, other CSOs and the general public – can be involved when there is a need to discuss, support and help to implement project results.

One way to maintain relationships with stakeholders, both external and internal, in project implementation, is through a **Project Advisory Committee**. To have one is not universal practice among Science Shops, but some of them set up such committees for the duration of a project.

There are several issues to consider when organising stakeholder and public engagement activities:

- **Aims of involvement.** It should be remembered that stakeholder and public participation is not a goal in itself although stakeholder dialogue may form a core part of the project, for example when stakeholders' views are sought to inform agenda setting or the direction of a project. However, in some projects issues, the participation of outside actors might not be necessary nor appropriate to reach the goals – the definition of goals must bear in mind the benefits and limits of participation. Moreover, participation might even bring about unintended results if it is not carefully aligned with project goals and the organisation/project is not able or ready to incorporate public input. Thus, the project team should have a clear picture of why they want to involve stakeholders or the public, what the expected results of the activity are, and how they will be used.

- **Finding relevant external stakeholders.** If a Science Shop has already appointed a team of internal stakeholders, it must try to identify and engage relevant external stakeholders. Relevance may take different forms: providers of access to the research object (e.g. if the object is bees, then individual beekeepers, or even better their associations, farmers who would allow samples to be taken from their fields for the examination of pesticides), NPOs interested in the topic (e.g. environmental groups and organisations), providers of valuable contacts (e.g. most large environmental organisations have good contacts with environment – related government departments), decision makers (e.g. the national agency responsible for pesticide control etc.).

- **Decision on the form of engagement.** There are numerous different kinds of involvement techniques: from simple participation and undertaking work together, to formal public engagement techniques such as interviews and focus groups, co-creation events, scenario workshops or citizen panels, etc. Decisions about which method(s) to employ must take into account at least the following criteria: objectives (reasons for involvement and expected outcomes), topic (e.g. the nature and scope of the issue), contextual situation (e.g. available time), the available resources (e.g. funding and available facilitation competencies), and the number and nature of participants (e.g. their knowledge on the topic or interest in the issue).

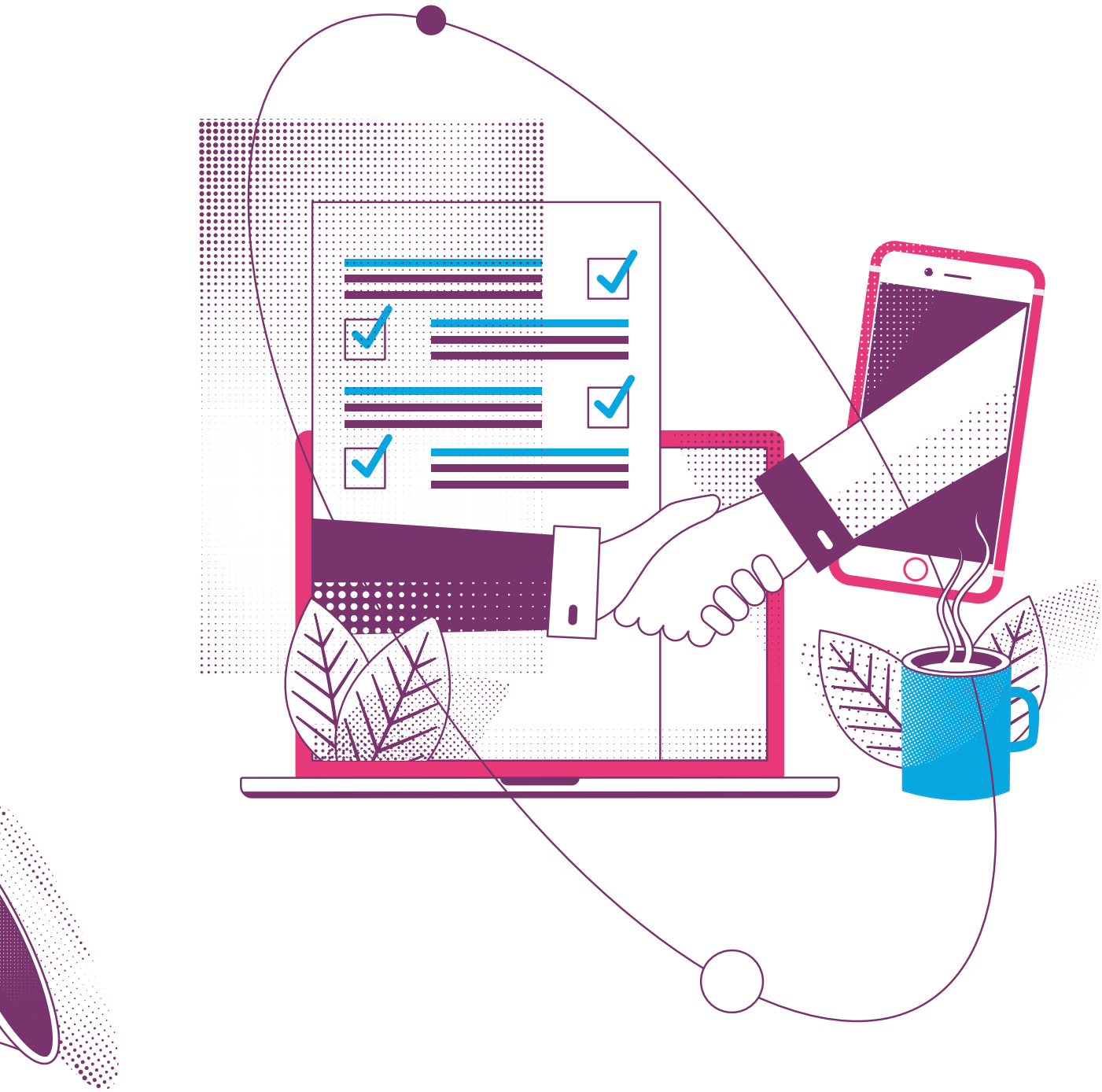
- **Importance of planning.** A key feature of successful engagement is the effective design of engagement activities, which in turn implies the need to take time in the planning stage, and for careful consideration of the timing of engagement, the contextual conditions that are necessary, and the representativeness of participants in terms of both planned participants, and who actually participates in practice.

- **Facilitation skills:** for dialogue and consultation projects, it is important to ensure that those undertaking the activities are skilled in facilitation/moderation, particularly when the activity involves a diverse range of stakeholders. This may involve bringing in external facilitators, utilising internal expertise or providing training.

09

10

Communication of the Science Shop



Why should Science Shops communicate?

The task of communication might be easily forgotten because of the focus on actual research or other project activities, or may be done as an afterthought without specific planning. However, when done purposefully, communication can contribute to achieving the main aims and sustainability of a Science Shop. More specifically, there are several reasons why Science Shops should communicate about their organisation and results.

- **Promoting the Science Shop.** Communication is needed to promote the services offered by Science Shop to local communities and CSOs and get new research requests. Although care needs to be taken not to over promote the Science Shop and result in a situation where demand exceeds capacity.

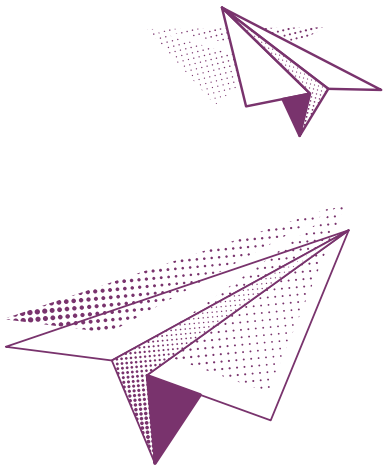
- **Staff recruitment.** Communication helps to attract new researchers and students willing to engage in CBPR.

- **Multiplication of impact.** Giving visibility to the results of each project can improve the possibilities of multiplying the impact: policy-making processes can be influenced, local initiatives can receive funding and other communities, regardless of their geographic location, can be inspired.

- **Reputation building.** A well-implemented communications plan also benefits the researchers and their institutions by enhancing their reputation, increasing opportunities for securing support (financial, potential partnerships and synergies, etc.), raising the profile of the institution / researcher / initiative within the scientific community and leading to cross-sectoral and new interdisciplinary approaches for research.

- **Obligation to communicate.** If civil society is not aware of how research affects their lives, they never will know the importance of the work undertaken by researchers, specifically research that directly benefits society. There is an obligation to communicate with society, especially when the project is funded by public organisations and institutions (funding from taxpayers). This also helps to build public trust in science.

- **Inspiration for others.** Communication of a Science Shop's projects can inspire other initiatives and the results put to different uses; thus, contributing to a more democratic and open use of science.



What are the goals of communication?

Communication about Science Shops can be divided into two broad goals or areas of communication:

1. Communicating to raise awareness of a Science Shop

For example, the aims could be to raise the profile of the Science Shop, attract researchers/students to participate, advertise the services of the Science Shop to local community organisations and build up awareness and trust within local communities.

2. Disseminating the outcomes of Science Shop projects

At the end of the project, conducting the right communications activities can help to reach people who can benefit from the research results or project outcomes, for example, other researchers or students working in the same field or the general public, where the findings are of broader public interest. Further, dissemination of research findings can lead to changes and improvements at the local level, serving as a tool for advocacy and influencing policy makers to make decisions based on the results and community demands. Dissemination of project results also contributes to the first objective and raises broader awareness of the Science Shop, as it shows that the Science Shop is active and provides specific examples of projects that demonstrate its uses and benefits.

Within these two goals, a Science Shop can engage in more defined communication campaigns with specific objectives related to its current situation and development needs, for example, to raise awareness of the Science Shop at the local level by getting articles published about the Science Shop in local news outlets, or to encourage more CSOs to submit research requests by publishing testimonials from former clients about their positive experience and how they have used the project results on the Science Shop's website.

How to implement communication activities?

Strategic thinking about communication regarding a Science Shop involves not only an understanding of the reasons to communicate and definition of communication goals, but also identification of appropriate target audiences, communication channels and key messages.

- **Audiences.** When planning communication activities for a Science Shop, you need to think about the specific target audiences that you wish to reach and adapt the communication to each target audience's needs. In a broad sense, a Science Shop's target audiences can be understood as their stakeholder groups. Examples of stakeholder groups include CSOs, students, the general public (often reached via the media), policy makers. These broad groups also may often need to be more specifically defined, for example, into specific fields e.g. environmental CSOs. Each can be reached using different methods and communication channels and their importance to the Science Shop will depend on a range of factors, including the Science Shop's environment and its stage of development (new or well-established). For example, for new Science Shops, one of the most important communication objectives is to promote the concept to CSOs to attract research requests.

- **Communication activities.** Communication activities of a Science Shop should be chosen according to the communication objectives and the intended audience. The most common communication activities undertaken by Science Shops are listed in the column to the right.

General communications activities conducted by Science Shops

One of the main communication activities that a Science Shop must engage in is to promote its services to community organisations. Some examples of how this can be done are listed below:

- **Targeted information on the Science Shop's or mother organisation's website (perhaps with a simple enquiry form)**
- **Use of social media channels**
- **A drop-in facility, whereby the office is open to the public at specific times of the week**
- **Presentations at local events and conferences**
- **Face-to-face meetings with individual community organisations**
- **Targeted mailing (via post or e-mail)**
- **Flyers and leaflets**
- **A regular newsletter (to the Science Shop's mailing list)**
- **Articles in local media and/or interviews with the Science Shop coordinator and press releases**
- **Briefing events to which community organisations are invited**
- **Use of external networks, websites, newsletters**
- **Awards**

Some of the methods that can be used to communicate the results of Science Shop projects are as follows:

- **Use of own or mother organisation's website and social media**
- **Press releases (distributed to relevant media) and other collaboration with media**
- **Annual or other reports (printed or online)**
- **Knowledge cafés and other public engagement events, exhibitions**
- **Scientific publications**
- **Presentations and posters at conferences**
- **Policy briefs and papers**

- A **website** is a key communication tool for a Science Shop which can be used to host general information, and it is a key reference point to which to direct stakeholders interested in the work of the Science Shop; it can also serve as a platform to host and disseminate information about individual projects. A Science Shop may have its own independent website or may be able to use the web facilities of its mother organisation, for example, it could have a dedicated area on a university website. Another vital channel for Science Shops is direct personal communication. Many Science Shops, particularly younger ones, say that often the most effective way of getting research requests and getting stakeholders involved is via direct face-to-face communication.

- **Messages.** There are several considerations that help to craft messages that catch the attention of the audience and increase the likelihood of achieving the desired effect. First, you have to think about the audience's needs rather than those of the project or your organisation. Appealing to people's interests or offering a solution to their problems is a good way to start a message. Second, when formulating messages, consider the audience's characteristics, specifically their level of knowledge, education, background, and any language barriers. Then, the message should be drafted according to the characteristics of the communication channel – the length and style of a message posted on Twitter will obviously differ from those of an email or article.

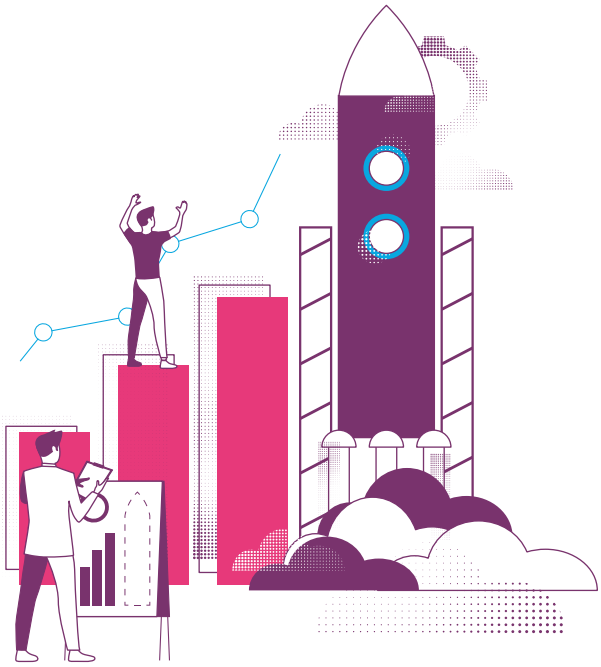
Differences between types of Science Shops:

The key difference relating to the implementation of communication activities is between those Science Shops that function **within a mother organisation** and **independent** Science Shops. The former ones can take advantage of the branding of the mother organisation, its established communication channels and resources (communication staff or materials) to implement communication activities. Independent Science Shops have to create their own branding and communication channels, and implement and fund communication activities themselves.

Who should implement the communication activities?

General communication activities about the Science Shop are usually undertaken by the Science Shop's staff. If there is some budget available, a Science Shop can outsource certain communication tasks. Hiring communication professionals is particularly useful during the establishment phase, when the Science Shop has to create its corporate design (logo) and launch a website or other communication channels. If there is no budget available, these tasks could also be implemented by volunteers or design and IT students.

Ideally, a communications plan should be developed for each project being undertaken in partnership with the client organisation. In reality, Science Shops often do not have time and resources to undertake communication activities relating to individual projects, however, information about individual projects can be published on their websites, in annual reports etc. The client organisation should therefore be responsible for the wider communication of the project results, possibly with participation of students, researchers and other people involved in the project.



How do you measure the effectiveness of your communication activities?

It is useful to monitor and evaluate the communication activities of a Science Shop in order to know which ones are effective and to draw lessons for the future.

The extent of evaluation will depend on the extent of the communication efforts: if a Science Shop is implementing a wide communication strategy/campaign with specific objectives, it would be meaningful to make a formal evaluation; at other times, the Science Shop will limit itself to monitoring and some simple evaluation. For small Science Shops that undertake minimal communication activities, formal monitoring and evaluation is of limited use. Even if a Science Shop does not evaluate its communication practices, it is useful to track communication activities for the purposes of accountancy (to present results in reports to the mother organisation or potential/current funders). One simple action to evaluate the effectiveness of communication activities is to collect information on where new clients, students who undertake the projects and volunteers have heard about the Science Shop to identify the most effective communication channels. A shared Excel sheet could be used to gather information about communications activities.

10

Evaluation and impact assessment

Why should a Science Shop undertake project evaluation?

Project evaluation and impact assessment are very important activities undertaken by Science Shops to ensure project quality management and demonstrate the Science Shops' impact on society. However, many Science Shops still neglect the importance of such activities and do not undertake monitoring and evaluation. The aim of project evaluation is to determine the relevance and level of achievement of project objectives, development, effectiveness, efficiency, impact and sustainability. Project evaluation helps to steer the project towards achieving set goals and understand how well the project is progressing towards achieving planned impact. Therefore, project evaluation helps to establish the basis for future improvements to Science Shops' activities.

What kind of project evaluation should be undertaken?

The types of project evaluation can be distinguished according to when the evaluation is performed:

(based on Trench et al. 2013)

- **Early stage (ex-ante) evaluation** should take place in the preparatory phase of a project, before any substantive work has been done. The main purpose of evaluation at this stage of a project is to ensure that the objectives and methods have been clearly defined and that the appropriate resources are in place to meet the objectives. It can also help identify the anticipated impacts of the project.

- **Monitoring** is a type of evaluation that is performed while a project is being

implemented, with the aim of improving the project's impact. Unlike other types of project evaluation, monitoring is usually performed through communication and reflection between the project coordinator and the staff involved in the project implementation. As such it does not need specific tools and does not result in a report.

- **A mid-term evaluation** is formative in nature and typically used to assess achievements half-way through the project and to derive lessons for implementation. It should be conducted at the mid-point of projects that run for more than six months. Thus, it may not be practical for shorter projects. The main purpose of evaluation at mid-point in a project is to identify where improvements can or must be made in order to complete the project satisfactorily.

- **A final (ex-post) evaluation** is performed shortly before the end of a project (or a project's phase) in order to determine the extent to which planned and unplanned objectives and outcomes were achieved, to identify the factors of success or failure, to assess the sustainability of the benefits generated, and to draw conclusions that may inform future projects. This evaluation aims mainly to establish the level of satisfaction of those involved with the outputs and conduct of the project.

- **Post-project evaluation (or impact assessment)** should be conducted one year after the delivery of the final report or even later. This aims to check longer-term impacts of the project through retrospective assessments of the project outcomes. It may be especially useful for longer-term planning and demonstrating the effectiveness of a Science Shop's work.

The types of project evaluation that will be undertaken usually depend on the duration of the project and available resources. For example, for a small-scale project performed by students in 3–6 months, monitoring combined with a final evaluation will be sufficient. For a large project that lasts for 2–3 years and involves many stakeholders, it is worth allocating the necessary resources and performing each type of evaluation. Nevertheless, if resources are very limited in a long-term project, the monitoring and final evaluation are still the most important types of evaluation to undertake.

Why do impact assessment?

Impact evaluation deserves special attention because, on the one hand, impact assessment is rarely undertaken by Science Shops and, on the other, it provides insights into the long-term impact of Science Shop projects and as a result demonstrates the main benefits of work undertaken by Science Shops.

Post-project impact assessment is beneficial to all Science Shops as:

- a tool to demonstrate accountability
- a useful source of evidence for future project proposals
- an argument to support fundraising activities

Moreover, the recent emphasis on "research impact" or the "third mission" of universities heightens the need for universities to demonstrate their impact on communities, and this will also apply to Science Shops and how they collect evidence on their impact on society.

How do you evaluate projects and perform impact assessment?

Both project evaluation and impact assessment are carried out in similar ways:

- **Plan and allocate resources.** You should think about who will be responsible for project evaluation and impact assessment, identify stakeholders and partners to be included, and identify specific indicators that can be used to demonstrate project results and impact.
- **Select appropriate tools.** Use, adapt or create tools (questionnaires, interview guides, etc.). It is recommended to use contact methods for collecting data (face-to-face qualitative or quantitative interviews, focus groups, evaluation meetings, etc.) rather than distributing

questionnaires. This ensures a higher completion rate and completion on time. Sometimes qualitative methods can give you more innovative insights about the project implementation or impacts achieved and what needs to be improved than quantitative questionnaires, which as a rule mainly reflect what is already known and only show the distribution of opinions.

- **Perform the evaluation or assessment and write a report.** Data should be collected using dedicated tools and involve all the relevant stakeholders. As for project evaluation, a draft copy of the assessment report should be given to all stakeholders and their feedback used to improve the report.

- **Communicate the results.** Early stage or mid-term evaluation reports are usually only circulated to stakeholders involved in the project, while final evaluation and impact assessment can also be used to inform the communication of project results to a wider audience in order to ensure future support and funding.

- **Monitor the impact.** Unlike other types of project evaluation, impact assessment includes monitoring the achieved impact in order to identify changes at local or even national level. It provides additional arguments that can be used to demonstrate the sustainability of the project results and assist fundraising activities.

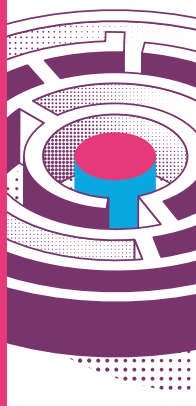
Useful resource

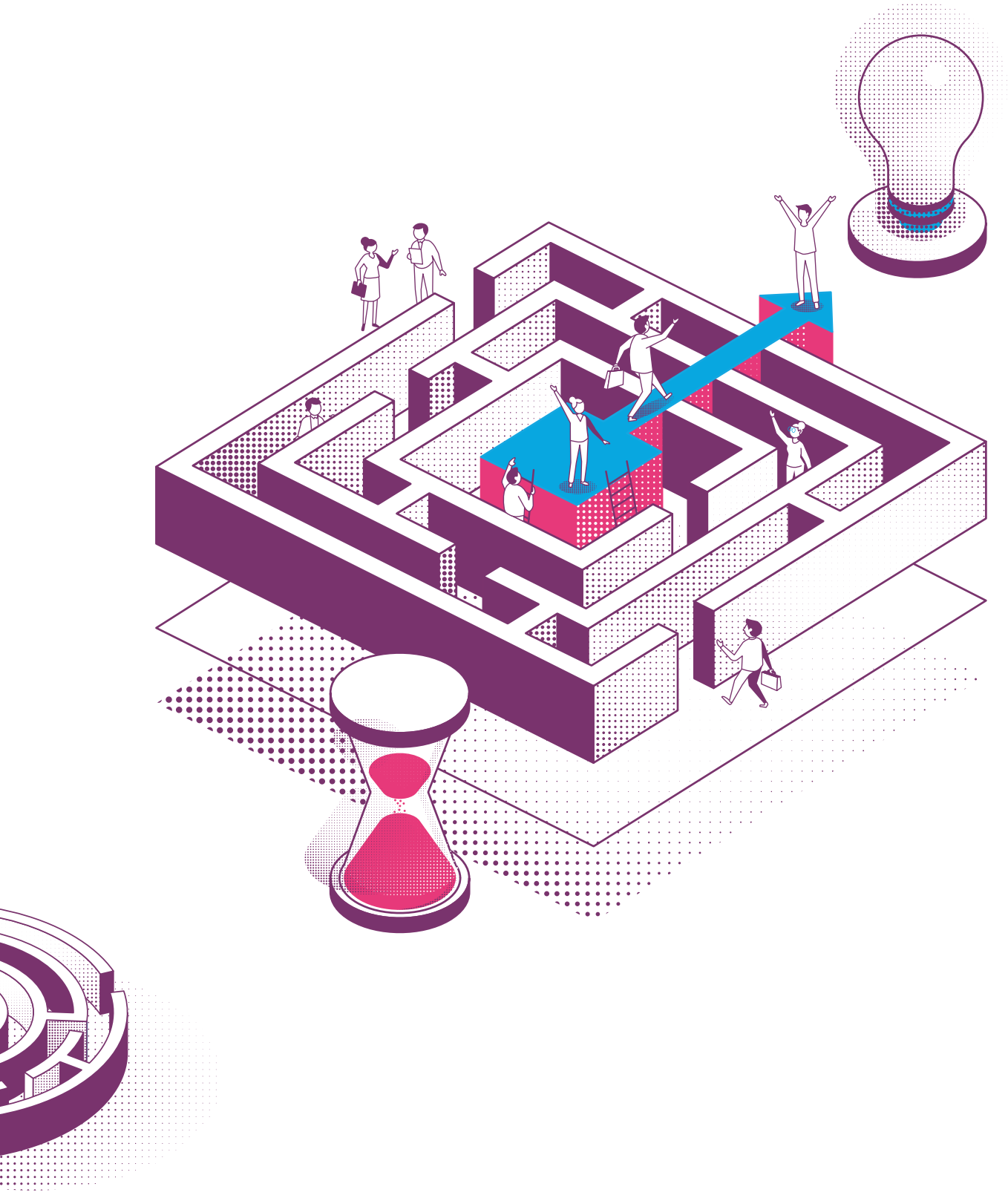
A number of simple and useful instruments for the evaluation and impact assessment of Science Shop projects already exist, for example, those developed by the EU PERARES project:

Trench et al. (2013) PERARES Deliverable D9.1 – Evaluation Guidelines and Instruments, available at: https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Library/Project_reports/PERARES_EValuation_Guidelines_and_Instruments_D9.1.pdf

11

Challenges for Science Shops





What are the challenges during the establishment phase of a Science Shop?

During their establishment, Science Shops face different structural challenges depending on their type of organisation. **Science Shops with a mother organisation** have the challenge of finding their place within the structure of the mother organisation. Hence, in universities, they have to gain support from relevant parts of the university such as senior management and one or more faculties or they have to negotiate for resources, such as funding for personnel and equipment or the use of premises.

Independent Science Shops are faced with greater structural challenges during establishment. First, there has to be a group of people committed to setting up the Science Shop in their free time without the institutional support of a mother organisation. As independent Science Shops do not have any core funding, organisers are often not paid in the establishment phase and there is no money for equipment or premises. To overcome this challenge, independent Science Shops often have to rely on the enthusiasm and commitment of the organisers even more than university or institute-based ones. Finding volunteers who support the idea of CBPR or other activities of Science Shops can be relatively easy for some topics, especially those with a high social impact, but can be more complex for other topics.

Also finding premises is a crucial issue for independent Science Shops as there is normally no budget available. While virtual Science Shops do exist, many Science Shops find that the presence of a physical space as a meeting point for stakeholders is vital. Therefore, a starter grant or support from other partner organisations must be sought.

These issues can be solved by the Science Shop getting a grant to run its first project, which can be challenging for a Science Shop that has no track record yet or paid personnel to do the research. While this sounds difficult, there are numerous successful examples of Science Shops that have started in this way.

Useful resource

A guide produced by the EU PERARES project contains useful advice on how to develop policies and strategies supporting the sustainability of Science Shops by linking to HEI policy priorities:

http://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Dokumente_Dateien/Toolbox/LK_C_Practical-guide-developing-policy-and-strategy.pdf

What are the challenges after the establishment of a Science Shop?

The main challenge that most of the Science Shops face after the establishment phase is sustainability. Sustainability, i.e. the ability to sustain the operation of the Science Shop over the long-term, is a challenge for at least two main reasons: economic viability (funding) and the loss of key personnel.

As described previously in the guide, a Science Shop always faces a trade-off when it comes to its **economic viability**. Being part of a mother organisation can provide it with core funding although it lacks some independence. On the other hand, independent Science Shops have more freedom when it comes to their areas of interest but they have to find funding, most often by answering to public research calls. This can limit their independence to a certain extent.

To overcome the challenges related to funding, a diversification of funding sources is recommended so the Science Shop does not become reliant on one source of funding and undertakes other types of income generating activities to cover costs between paid projects. It is also important to be proactive in searching for additional funding e.g. through participation in public engagement in science projects, by looking for opportunities to collaborate with CSOs on projects via joint funding applications, offering paid consultancy services etc.

Loss of key personnel can be another challenge to the sustainability of a Science Shop. Many Science Shops are driven by highly committed and enthusiastic individuals. Small Science Shops can be at risk if these key people leave or retire from the organisations. Therefore, it is important to develop expertise and experience within the Science Shop by motivating, training, and involving other staff in the management and implementation of Science Shop projects.

What are the challenges related to projects?

Science Shops can face challenges to find enough research requests to match the internal needs and available resources for research topics, or even to answer all research requests that the Science Shop receives. Science Shops in certain countries struggle with this more than others, and it also depends on the stage of the Science Shop's life cycle. At the beginning of a Science Shop, it might struggle to get research requests, particularly if the Science Shop concept is unknown in society. This situation is reported by Science Shops operating in Eastern and Central Europe that have no tradition of

engaging civil society in research activities. In other countries, where the idea of the Science Shops is well established, such as in the Netherlands or Belgium, Science Shops might find themselves in the situation of not being able to answer all of the research requests received from CSOs.

Regarding difficulties finding projects, a lot of initial work is needed to make community organisations aware of the Science Shop and to demonstrate the value of its services. Actively spreading the message about (free) research possibilities through meetings, forums, mass media and intensive personal work may help to overcome this challenge. If, despite intensive marketing to CSOs, a Science Shop is still having difficulties finding projects, there are a number of other ways of identifying topics for pilot projects:

- Science Shops can proactively search for research topics on behalf of CSOs by monitoring the media and identifying problems that CSOs face in their work that could be addressed via a project;
- Science Shops can answer public research calls;
- Science Shop organisers can initiate projects themselves based on CSO's needs;
- Science Shops can directly collect questions from the general public e.g. during science communication events.

Once research questions have been received, Science Shops have to find ways to answer them. A challenge is that CSOs and the general public often do not understand the restraints and processes of academic research. This means that a posed question may be too broad to be answered reasonably, it may be beyond the expertise of the involved persons, or cover many different areas of interest. Also, it can be difficult to balance the civil society organisations' timescales for when they need the research with constraints such as academic terms (semesters). Balancing the expectations of the community organisations, who rely on the project results, with coursework requirements can also be a challenge. In such case, skills such as project management and communication with clients, and flexibility are needed. For example, university-based Science Shops can potentially handle this by rephrasing or splitting research questions, or by building multidisciplinary research teams involving students and researchers from different faculties.

If a Science Shop faces the challenge of receiving more research questions than it can handle or questions outside the competence area of the Science Shop, it can redirect the request to other Science Shops working in the area or country.

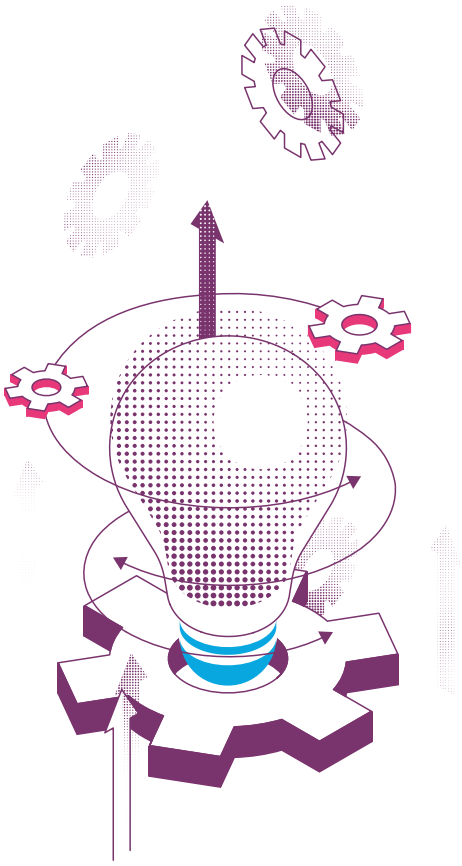
What are the challenges related to stakeholder involvement?

Working with a diverse range of stake-holders, e.g. funders, policy makers, and grassroots communities also brings challenges due to their different requirements, approaches and ways of communicating.

Another challenge is **how to involve stakeholders actively** in the research process. The main recommendation would be to strengthen the engagement skills of Science Shop staff through training and practice.

What are the challenges related to project evaluation and impact assessment?

To clearly identify the impact of a Science Shop, a structured process is necessary. This mainly poses a challenge on two levels. First, the Science Shop may lack the resources to conduct impact assessment. Second, many Science Shops work on broad societal topics like health or the environment. Many projects in these areas can only show their full impact in the medium to long term, while the impact of others is hard to measure, as Science Shop projects often are only one of many different contributing factors to solving the problem.



Nevertheless, there are ways and tools to evaluate the impact of Science Shops and address these issues, for example:

- By using relatively simple, not resource inten-sive, evaluation tools, such as the questionnaire – based tool produced by the EU-funded PERARES project (Trench et al. 2013);
- By focusing on qualitative evaluation methodologies to demonstrate impact, as exemplified in the annual Impact Reports published by UTS Shopfront (see: https://issuu.com/utsshopfront/stacks/681e97dfa95e4 1c3a860619b6200 1cc1)
- By looking for separate funding from the mother organisation or other sources to undertake specific projects on impact assessment, as exemplified by the Office of Community-University Engagement at the University of Victoria (Canada) (see: https://www.uvic.ca/cue/research/our-rese arch-projects/index.php);
- By planning impact assessment as an integral project phase in publicly funded projects.

12

Sources of support

When does a Science Shop need support?

There are many different aspects to running a Science Shop and coordinators should try to take advantage of support to provide them with additional skills and knowledge. Support is particularly needed during the establishment phase of the Science Shop, as well as when there is a change of coordinating staff. Nevertheless, in a constantly changing environment, Science Shop staff should look for professional development opportunities to develop their knowledge and skills and gain new ideas on how to increase the quality and impact of their Science Shop.

What sources of support are available?

Sources of support include:

- **Training.** There are, although infrequent, courses and summer schools on how to run a Science Shop, for example, held in association with the Living Knowledge conference in Europe or run as part of EU projects. Coordinators should also identify opportunities for professional development for others involved in the Science Shop, both for staff as well as for those that implement the projects. Topics could include community-based participatory research, communication, project management, relationship building, etc.

- **Conferences.** In addition to the bi-annual Living Knowledge conference, many Science Shops present their work at other international conferences on public engagement and open science.

- **Mentoring.** Coordinators could consider finding a mentor from another Science Shop, joining the SciShops twinning scheme, or undertaking a study visit to a similar type of Science Shop. Some Science Shops offer tailored (paid-for) mentoring (contact, for example, Henk Mulder at the University of Groningen or Norbert Steinhaus at Bonn Science Shop for more information).

- **Networking/collaboration/partnership.** Joining the Living Knowledge network, which is a community of practice for Science Shops, and other networks of Science Shops (e.g.

regional) provides valuable access to a community of professionals working in the field. Participation in European-funded and national projects can also provide an opportunity for Science Shops to work together, to learn from each other and to create long-lasting partnerships.

- **Published information about Science Shops.** There are numerous written sources on various aspects of running a Science Shop and real-life cases, such as the Living Knowledge toolbox and websites of EU projects such as SciShops, PERARES, INSPIRES. Links can be found below.

Useful resources

- **SciShops:**
  https://project.scishops.eu
  (particularly, see the "Resources" section)
- **Living Knowledge network:**
  https://www.livingknowledge.org
  (here you can also sign up to the newsletter)
- **Living Knowledge toolbox:**
  https://www.livingknowledge.org/resources/toolbox/
- **Living Knowledge library:**
  https://www.livingknowledge.org/resources/library/
- **PERARES:**
  https://www.livingknowledge.org/projects/perares/
- **INSPIRES:**
  http://inspiresproject.com/

List of Acronyms

CSO – Civil Society Organisation
CBPR – Community Based Participatory Research
FAQ – Frequently Asked Questions
NGO – Non-Governmental Organisation
NPO – Non-Profit Organisation
PR – Public Relations

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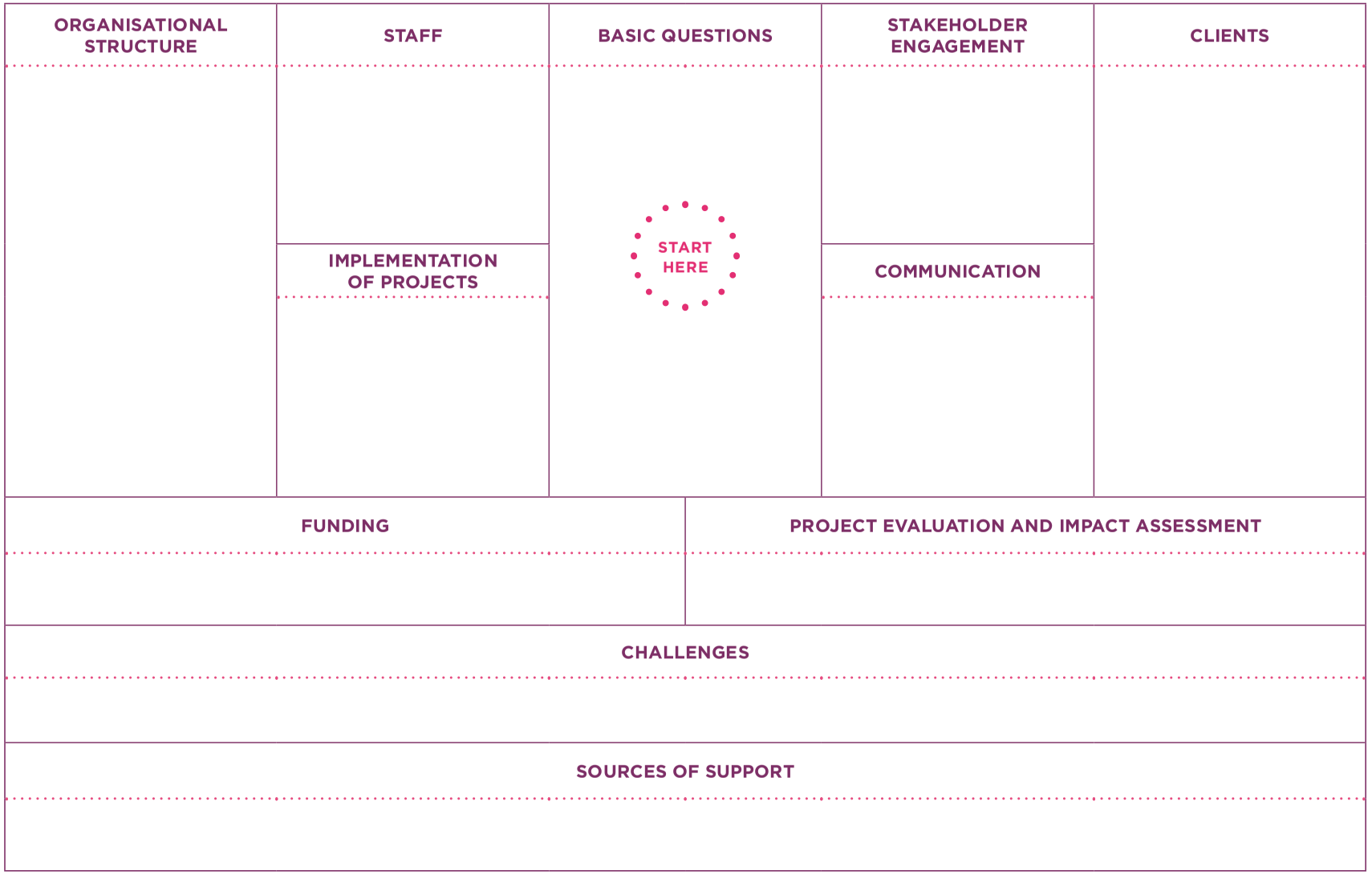
Websites:

- Community-Engaged Research (CER) at the University of Victoria 2009—2015, https://www.uvic.ca/cue/research/our-research-projects/index.php

- Living Knowledge Toolbox, https://www.livingknowledge.org/resources/toolbox/

- Shopfront Annual Reports, https://issuu.com/utsshopfront/stacks/681e97dfa95e41c3a860 619b62001cc1

SciShops.eu Project Model Canvas



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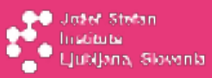
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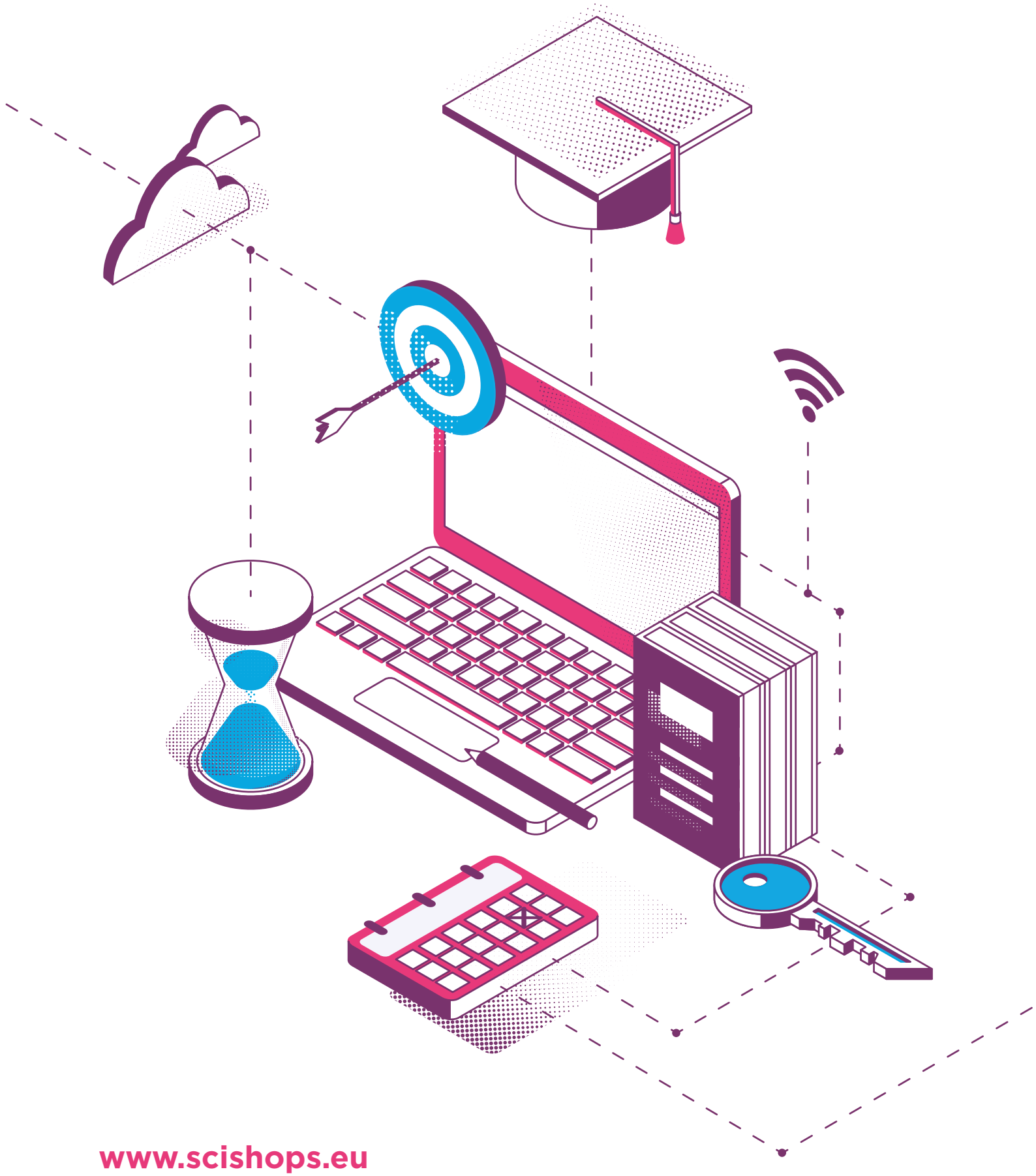

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