Interacting Minds Podcast
Manual

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Welcome to the Interacting Minds Podcast Manual!
This manual is a basic introduction for everyone who would like to set up a (scientific) podcast or who occasionally catches themselves in daydreams thinking *"Maybe, I should try it"* and would like to get an overview of what that actually would entail.

Note: This document has been specifically written for members of the Interacting Minds Centre at Aarhus University based on the equipment and resources available to them, but we hope it is also helpful beyond our local community.

Content Overview

Structure of this Guide

To help you navigate through the different stages, tasks and roles that are part of the podcast process, we have decided to divide this guide into five sections that present the chronological stages that most podcasts will go through — from originating an idea to publishing the result.

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Roles and tasks within a podcast production

Additionally, we have organised the tasks in each section by the roles that take responsibility for the given task: Producer, Content Creator, Sound Technician, Host, and Editor.

By doing this, we are not assuming that you are necessarily assembling a large team (One person can have multiple roles: e.g., Producer, Content Creator, and Host). We merely want to bring to the surface the different skill sets required to create a podcast, as well as the workload involved.

Below a little overview what each role encompasses:

- **Producer:** The podcast producer (also Project Manager) is in charge of the overall organisation of the podcast. This includes coordinating the overall production team, budgeting, scheduling, guests booking and support, marketing, and processing episode statistics.
- **Content Creator:** The content creator (or "Writer") is responsible for exactly what the name suggests: creating the content. This includes coming up with the concept of the podcast, developing the structure, writing scripts, researching the topics/guests, preparing pre-interview questions and guide, and creating the show notes, as well as other supporting content.
- **Host(s)**: As the role most synonymous with the podcast, they are the voice(s) that guide the audience through the podcast. Depending on the podcast format, they interact with guests, read scripts, or provide commentary. Due to their close relationship to the podcast listeners, they can also take on public engagement.
- **Sound Technician**: The (Sound) Technician takes ownership over the equipment and the recording environment. This involves testing and setting up the recording equipment and environment, supporting others in the use of the equipment, levelling, and managing the recording.
- **Editor (Content/Sound):** The Editor joins the process in the post-production of a podcast episode, once the recording has been completed. They are responsible for both form and content edits, cleaning sound files, adding the music and/or sound effects, mixing and mastering.

There are also two additional roles that may come into play when you are producing a podcast: A **musician** (who composes the intro music and potentially interludes) and an **artist** (who creates the thumbnail art for the podcast) and any further material for the promotion of the podcast (e.g., banner for twitter).

Should I set up a podcast?

Let's start this guide with, perhaps, the most important question: Should you set up your own podcast? It is not an easy question to answer (especially for another person), since much of the answer depends on your individual situation, your motivations, and the resources and network available to you. So, instead of a yes or no, it might be more helpful to provide you with a list of pro's and con's to guide you in your decision making.

Pro's

First and foremost, podcasting is a **great science communication tool** to reach a diverse set of audiences. It is easy to distribute content via hosting platforms to a wide range of podcasting outputs (e.g., Spotify, Apple Podcast) and — especially when targeting a research audience — provides a much needed reading break for listeners already overloaded with scientific papers.

By engaging in podcasting, you gain many **helpful skills** that transfer beyond the podcasting context. Speaking in front of a microphone and developing dialogue is useful to anyone that engages in conference presentations, talks and lectures. Writing Show Notes and Episode Scripts further nurtures writing skills in making texts more accessible to a layman audience. It also lets you practice media outreach, for example, by making accessible arguments about complex subjects — a necessary skill to communicate with journalists. Additionally, editing audio files and cutting a rough recording into a meaningful episode teaches technical skills, and resembles in many instances editing a rough draft into a readable manuscript. In post 2020 academia, you may also use your newly gained skills to record and produce better online lectures.

Perhaps one of the biggest advantages of podcasting is that you can **create a resource** that you may draw on to disseminate your research and work. For instance, you could produce topic-relevant episodes to draw on in your teaching, or discuss your recent publications in depth (e.g., highlighting the parts that you had to cut out of your manuscript due to character limits). Podcasts can also be named in impact statements in applications as evidence of meaningful ways to disseminate your work to the public.

Podcasting can offer many opportunities to **engage in networking and build your knowledge of a topic**. When you are creating a podcast, you are in charge of who is interviewed. It can be the opportunity to reach out to someone you really admire in your field and have a meaningful conversation with them over coffee and cake. Doing so extends your network within your field of interest and allows you personal interactions with the researchers that actively shape it.

Podcasting can also be a **meaningful format for your students** — think, for instance, summative assessments. You could consider replacing a written assignment with a podcast format in a portfolio assessment. An example of this can be found in the Elective course Play, Learning, and Creativity at Aarhus University (see p.5 in the syllabus document), where students are given the opportunity to submit the response to their assignment in a format of their choice. Going through it yourself would help you support students that choose this format, as well as better appreciate the workload involved.

Last, but not least, podcasting can be **incredibly fun!** You can collaborate with colleagues in a new way, engage with interesting scholars in your field, and discuss something that you are passionate about with a broader audience. Much like preparing for a talk or lecture, it can also be a really focused way of digging deeper into research, and help you structure and consolidate the knowledge you already acquired.

Con's

The biggest influence affecting your decision will likely be the needed **workload and time** involved in setting up a reasonable quality podcast. And to get straight to the point: Yes, especially in the starting days, it can take quite a bit of time and unforeseen workload to engage in podcasting. The more routine and experience enters the process, the more predictable the workload becomes.

To complicate things, time and workload is highly dependent on the scope, format, and group setup of the podcast, so it is hard to give you an estimate to consider in your

decision making process. Depending on the structure of your podcast, you may be able to divide workload amongst members of a team, or reduce workload by relying on an existing studio setup. But to give you at least some general idea: For the first episode of Interacting Minds (from developing the idea to publishing), we spend roughly an estimated 80-100 hours between the entire team (5 of us) with the actual recording taking only 2 hours. For the following episodes the time has reduced to around 20 hours per episode across all members.

The other big restraint for podcasting is **Funding and Equipment**. The costs for a basic podcast setup is between 2.000-7.000 kr. — the price hereby depends on the amount of microphones, setup (flexible/stationary), and the recording equipment used. *Good news for IMC members is that the equipment is already in place (see IMC related resources).*

Yet, additional funding might still be helpful to hire a professional sound editor to take most of the technical work off your shoulders. In the case of the Interacting Minds Podcast, we budgeted for 2.500 kr. per episode to hire our local Sound Specialist and Producer Kirsi Tilk to help with the recording, editing, and mastering.

Unfortunately, podcast funding is not largely available, which makes it especially difficult for early career researchers without their own funding to engage in podcasting. Thus, it might be helpful to consider writing science dissemination and podcasting budgets into your next grant application or seeking out smaller grants specifically aimed at supporting science communication.

A final point to mention in this section is that it takes time and often a quantity of episodes to build an audience of listeners. This is not that important if you want to use the podcast on your personal page to bring your work to a larger audience. Yet, it is helpful to keep in mind.

IMC members: Please get in touch if you would like to suggest your own episode to the IMC podcast or draw on the podcast audience to distribute your own podcast.

Summing Up

So, in summary, there are good reasons to do a podcast and also obstacles that might hinder you in your endeavour. If you are still unsure, consider the following questions and explore the full Interacting Minds Podcast Manual to get a better understanding of what the process entails:

- Why do I want to set up a podcast?
- What is my goal? *The answer here can simply be trying it out.*
- Do I have the time and capacity?
- Who else could support me if I do it?
- What equipment and resources can I draw on?

Developing the concept and infrastructure

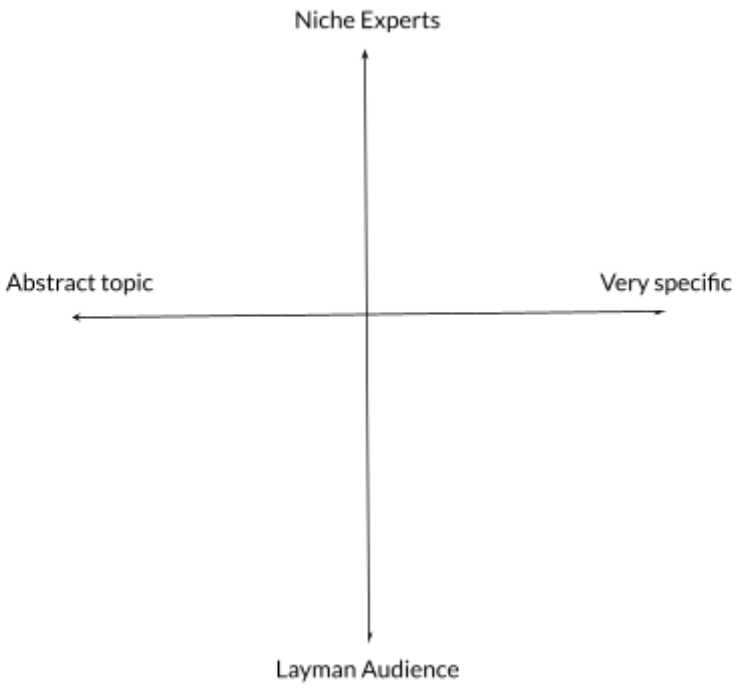
Content Creator(s)

General Idea: Concept and Topics

In the beginning of most podcasts lies the good old brainstorming in a hurricane of post-it notes. It can be helpful to already have collaborators to bounce back ideas, but friends and colleagues can also help in feedbacking and polishing. If you are drawing on a blank when getting started, take a moment to identify your expertises and interests. What knowledge do you hold that you want to communicate to others? In this, remember that as the content creator, you don't necessarily have to host the podcast by yourself. You can invite/hire a collaborator to take on the hosting role.

Dimensions of your podcast

When exploring your idea, consider its breadth and depth. In other words, how abstract or specific is your topic (breadth), and what kind of audience will find your content understandable and accessible (depth)? Is it a podcast about sleep for the general public, or is it targeted at your students to help them grasp a specific concept and its relationship to the course topic? Try placing your ideas across the two dimensions and consider how it would affect the resulting podcast.



This can help you narrow down your target audience and topic, by considering what assumed knowledge you can build on in your dissemination. For example, how would you set up a podcast about *sleep (in general) / sleep medicine / the mechanisms of memory during sleep* differently to address an audience with basic training in experimental design? Advance training in Neuroscience? No training at all?

Once you are happy with your placement, consider the following questions:

- Where would your audience learn about your podcast and gain access to it?
- What formats will most suit your audience's interests and needs?
- What information and supporting documentation will your audience need when listening to the episodes (e.g., ShowNotes, Transcripts, References). In this, consider what language will be accessible to your audience. Will they be able to navigate specific terms or abbreviations? If unsure, ask an uninformed potential audience member for help. You may also keep in mind the accessibility of the references (e.g., if discussing scientific research for a non-scientific audience, consider prioritising open-access material).

Format - what is your general structure?

Following an initial rough idea, it is time to consider the types of formats that your podcast could take. Simplified, it comes down to a choice between script-based or loosely scripted. But let's unpack these to make it clearer what each format might entail:

Script-based podcasts

Script based podcasts are those that follow very specific narratives and often resemble audiobooks in their styling. They lend themselves to educational podcasts or those focusing on telling a clear narrative (e.g., historical events). Examples of this are "Noble Blood" and "Myths and Legends", two podcasts in which the host reads out a pre-written and researched script to the audience. There is no free dialogue. Scripted podcasts have the advantage that you can polish the content ahead of recording and that your script can function as the Show Notes, or can at least make it easier to construct them.

However, reading a script aloud is a craft, and badly read scripts can be experienced as monotonous and unengaging.

Loosely scripted podcasts

Loosely scripted podcasts represent a diverse set of podcasts formats that all follow a prepared outline or basic structure, but allow room for free dialogue within given sections. This includes, for example, interview based podcasts (e.g., Interacting Minds) or dialogical podcasts on a given topic. Some podcasts follow two scholars discussing a topic of expertise (e.g., Very Bad Wizards discusses moral psychology and social psychology in an informal manner), others draw on an uninformed second host that can clarify and ask questions on behalf of the audience (e.g., Maintenance Phase). Loosely scripted podcasts — especially when following a very loose script — can be more work to edit, yet can also feel more engaging as interesting side stories, host banter, and situational humour can add to the overall relatability.

Host

Much of your decision about the format will depend on the hosting setup you choose. Will the show be hosted by a single host, alternating hosts, or a team?
Single hosts allow for a more flexible recording schedule, but also means that the chosen person has to carry conversations by themselves the entire time (e.g., for dialogical podcasts) and the podcast is reliant on this person having the availability and capacity to record. **Alternating hosts** also allow for flexibility in scheduling, yet the audience needs to build connections with multiple hosts. **Hosting teams** often have the advantage of producing more dynamic content in which pauses can be filled by either host (think banter, diverse perspectives, expert vs. naive host dynamics,...), but scheduling multiple hosts (plus potential guests) can sometimes feel like playing an advanced level in tetris.

In most podcast productions, the host and content creator will be the same person or at least quite considerably overlap in their role. If you decide to have a hosting duo or team, you may also want to consider the specific role of each host in the overall podcast/episode. For instance, you may choose to alternate between an expert and

layman role amongst the hosts. The expert researches and prepares the episode, while the layman functions as an uninformed dialogue partner, acting as a proxy for the podcast audience by asking simple or general questions. Alternatively, you could host a podcast where both hosts have equal or similar expertise and have a conversation about the state of knowledge in a given field.

Tip: In general, avoid having more than 3 hosts, especially if you are inviting guests to the show. The more voices are presented, the more difficult it gets for listeners to separate out the different voices and keep track of the conversation.

Length and Publishing Schedule

Another element to consider early on is the length of your podcast. It helps to both consider how long you intend to record and how long the final product will be. In other words, how much editing work will follow the initial recording. There is no general or optimal length for a podcast. It once again depends on the podcast's content and the audience targeted. Story Ninety Four have a helpful overview of Pro's and Con's for what length might make sense in your setting. In general, consider the following questions:

- How much detail and supportive explanation does your subject matter need?
- What podcast would suit the needs and capacities of your audience? Do they have time to listen to a lecture length discussion (e.g., educational podcast for students), or would they prefer short and quick summaries in TEDtalk length?
- How much time do you have to record regularly and what access do you have to people to interview, if applicable? Depending on the answer, you might choose a monthly episode frequency to accompany your schedule, or record a semester ahead to be able to output weekly lecture support episodes.

The last question specifically relates to your **publishing schedule** — the consistency with which you publish new episodes. This might be weekly, monthly, or season-based with months in between. Regular frequencies can aid in building a follower base and keep people engaged.

Naming the podcast

Now we come to the fun part of finding an identity for your podcast: its name. The general advice from most podcasting sites is to pick something memorable, catchy, and easy to find (See Anchor's "How to choose a great podcast name" for a more in depth discussion).

When producing for an audience beyond your current immediate network, the most important thing to keep in mind is how search engines will perform with your chosen name. In other words, be sensitive to how metadata is processed by available podcast platforms. For instance, Apple Podcasts uses title, author, and description fields for their search engine (See Apple Podcasts "A Podcaster's Guide to RSS" for help).

It also helps to check if the names you are considering, or closely resembling names, are already in use on available podcast platforms. If there are many resembling titles, your audience will have a hard time finding the right podcast. In this, be also sensitive towards having a similar name to existing artists, company names, video games or movie titles, to avoid copyright issues and mismatched audiences.

Once you have a general idea and format for the podcast, it is time for the producer to support the process.

Producer

Budgeting and Finance

Perhaps the most important question for the producer right at the start is how to finance the project. The producer can get an overview of potential costs by setting up a budget overview in consultation with the remaining team members. Below a few core elements to consider:

- **Do you have access to equipment or will you need to borrow or buy your own?** *Note that at the IMC, you have two options here: 1). You can borrow the portable podcast setup from the Interacting Minds Podcast, or 2). Rent the podcasting studio*

at Aarhus University Press (See IMC related resources). If you plan to budget for your own equipment, consider the costs for at the very least: microphones, a recorder/mixer/sound interface, XLR cables (always plan extra), pop filters, and mic stands. The IMC related resources should give you a good idea of what you will need.

- **Where and how will you host your podcast?**
  Do you want to just drop an audio file on a website or do you wish to distribute your episode recordings to the commonly available podcasting platforms (i.e., Apple Podcast, Spotify). If you are opting for the latter, you will need to budget for a hosting site, such as Buzzsprout (where the IMC podcast is hosted), Podbean, or a related site… (see this overview of services available).
- **How will you edit your raw audio recordings?**
  Unless you are budgeting for an editor that can assist you with the editing of your raw files (and that often comes with their own access to software), you will need to consider what editing software to acquire. There are a few freely available ones, but most come with a price tag. If you use a macbook, you already have access to GarageBand. If you are an employee at Aarhus University, you can have a discount on the Adobe Suite, which includes Adobe Audition. If you are a broke student, something like Audacity should do to begin with. For a rather complete list of audio editing softwares based on licensing options and available platforms, see the Digital Audio Workstation section here.
- **Where will you record the podcast and how will people get there?**
  In most cases the answer to this question could be a meeting room at the university or in your own living room. Yet, consider how you will get access to a quiet recording room and how all guests/hosts of the podcast will get there. There might be travel costs to budget or lunches to cover for the day.
- **Do you need help in any of the processes?**
  Hiring a helper can take a considerable amount of workload off the production team. For instance, you may want to hire an experienced sound editor that can also help with the technical aspects of the recording (see IMC related resources for a contact). This will allow you to focus on the content of the podcast.

> Budgeting would depend on the specific podcast editing needs, but you are roughly looking at around 10 hours per 30 min podcast episode.

Once you have a better idea of the potential costs, you can consider if you already have the available budget to cover the occurring expenses (e.g., through a research grant) or if you should apply for additional funding somewhere. In the Danish context, funders such as NovoNordisk have opened calls for Science Communication and Seed Funding calls at Aarhus University might consider science communication endeavours.

Researching Hosting

Within the process of setting up a budget, you will need to decide on your hosting platform of choice. This is important not just from a budgeting point of view, but may also affect your timeline and post-production. If you opt, for example, for a free Buzzsprout account, you are limited to 2hrs each month in upload time and your episodes will only be hosted for 90 days. As a result, you may want to align your publishing schedule accordingly. On the other hand, if you opt for a paid subscription, you may want to consider using available services such as magic mastering or transcription services to help in the post-production process. Knowing your hosting site in advance can also help you in knowing which content needs to be created by the content creator in the Episode Preparation phase. Most platforms will require a title, episode image, and description to accompany the sound file. Many also allow you to add chapter markers, transcripts, and sound bites for advertising purposes.

Admin and Orga

As already alluded to, part of the producer role is managing and assembling the podcast production team and coordinating their interaction. If you are hiring supportive team members such as technicians, the producer will need to set up contracts and arrange for payments at the beginning of the process. Once the team is in place, the producer can schedule and arrange meetings, keep track of responsibilities and tasks, and channel communication with external parties. This may involve coordinating test recordings, buying/borrowing equipment, booking rooms,

contacting potential guests, or setting up folder structures and communication channels for the team to use.

One of the most helpful tasks the producer might hold in the overall process is the facilitation of a project plan conversation in which the team considers deadlines, process pipelines, and assigns tasks to specific team members. Test recordings ahead of such a conversation can be a useful tool to surface potential issues. For instance, you may learn that you need signs to signal breaks, other equipment, or who would be helpful to have present during a recording session. To get yourself started in the conversation, a potential approach can be to use this manual to discuss how you, as a group, will navigate each production step along the way.

Technician

If you decide to rely on a professional studio (e.g., from Aarhus University Press), you can safely skip this step. After acquiring the necessary equipment (See Interacting Minds Podcast equipment), the next step is to hunt for a room suitable for recording. Although it might seem a lesser concern at first, it is a really non-trivial endeavour. There are good reasons for the walls of recording studios to be windowless and almost as thick as the vaults of a swiss bank. If human ears are good at focusing on the voice of a conversation partner and filter out the constant background noise that surrounds us, microphones aren't. By choosing a room, you control the soundscape of your podcast. This choice will greatly influence the amount of work needed in post-production. An innocent mistake can increase the number of hours spent cleaning the sound files by an order of magnitude.

Here are a list of helpful advices to keep in mind when choosing a room:

1. Avoid a room close to traffic, cars and passers-by. Even if you don't hear them at first, post-production steps will bring them to light.
2. **Room size**: Ideally, small to avoid reverberation and excessive echo.
3. Furnished rooms help in absorbing sound and mitigate reverberation (e.g., carpets, bookshelves, sofas).

4. Round or square tables allow for good interactions on podcasts with more than one person. You can keep eye contact without shifting your head too much and always face the mic.
5. Avoid creaky chairs and tables. You will hear them in post production.
6. Avoid setting up near doors and windows. They are, quite literally, windows on the constant buzzling fuzz of the city.
7. Avoid unneeded electronic equipment in the room. Depending on your set up, they can create static noise. Better safe than sorry.
8. (Optional) If you want a soundscape bring an extra mic. You can use it to capture "room" sound and make it easier to control the volume of the background during post production.

Once you have a room, it is time to test your equipment. Nothing metaphysical here, plug in your microphone(s) in your recording device and record yourself speaking. Make sure that everything is powered and turned on. The most important issues to listen for are **static noise** and **sonic artefacts** (e.g., regular pops, clicks, hissing and crackles). If you crank up the sound levels on your recording device to the maximum, you will inevitably get a terrible quality recording. The goal of the game here is to optimise your **signal-to-noise ratio**: tune the levels so that your voice is as loud as possible, without creating distortion and while keeping the background noise inaudible.

If some artefacts persist after adjusting the levels, your problem may be either software or hardware dependent. The most likely hardware issue is a connection problem between devices. The sound artefacts most often associated with this are loud static noise, hissing, regular crackling and/or on-off transitions. Make sure all the cables along the pipeline are well connected. If you are plugged to the electric grid, turn off or unplug all unused devices if you can. To identify where a connection problem is in your pipeline, try different combinations of mic<->cable<->plug. Most often, the problem is a bad connection or a faulty cable. Software issues are harder to predict and can introduce a wide range of fun glitches, like pitch shifting or bit crushing. If you record directly through a computer, keep in mind that Windows and Linux

distributions are famous for their drivers and hardware/software compatibility issues. In that case, we advise you to refer to google (or other favoured search engine, but really, google). In addition to typing the problem you are experiencing, add your recording device, software, and operating system to the search.

Tip: Without getting too much into details, there are 2 main families of microphones: static and dynamic. Static mics usually require an extra source of power called **phantom power,** while dynamic mics usually don't. Make sure you know what your equipment needs before you start. Without phantom power, the static mic will not record, but **if you power a dynamic mic with phantom power, you risk damaging it!**

After verifying that everything works properly, you need to make your room a recording room. Ideally, (1) set up in the centre of the room rather than in a corner or against a wall. (2) Avoid being too close to a window or a door and don't direct a microphone directly at these. As mentioned above, windows and doors can be important noise generators. (3) Cable management is an important part of ensuring a professional recording. Avoid dangling cables or cables running on the floor. Not only will you make your studio safe for your guests and equipment, but also, bumping, drawing, pushing, crushing and generally moving cables is likely to create artefacts and affect your recording quality. Moreover, cables are the most fragile part of your pipeline, they can wear out fast without proper care, and there is nothing more frustrating than cancelling a recording session because of a broken cable. To avoid problems, bundle the cables together and taped them on top or under the table to minimise possible movement. (4) If there is no dedicated technician, keep the recording equipment at hand during the session. You might need to adjust the levels on the fly, pause or stop the recording, and generally make sure that it all works fine. If there is one thing more frustrating than a session botched by a broken cable, it is one that was not recorded because of insufficient battery.

It could make sense to do both previous steps (Testing equipment and the room) during a test recording session with your collaborators.

Episode Preparations

Host and Content Creator

Develop an Episode Script

Episode scripts can come in many ways. They may be complete narratives to be read out by the host, or structural points to guide you through a conversation. In loosely scripted podcasts, they often consist of some full script elements (e.g., "Welcome to X! Today, we …) and some general outline and notes to support the developing argument. See, for instance, Buzzsprout's How to Write a Podcast Script [8 Free Script Templates] to get a general idea. Before recording your first episode, it can be helpful to record a dry run and test out how well the script is suited to your style of hosting. It also makes sense to decide early on if you want to record your intro and outro as part of the episode recording, or if you would like to do this afterwards (e.g., Off Menu) once you have a better understanding of the episode.

For the first season of the Interacting Minds Podcast, the Episode Scripts included a **general skeleton of the episode** (Intro, Intro Guest, Topic 1, Topic 2, Take Away, Call to Action, Outro), and **research notes and references in bullet point form.** The list included questions, quotes from research papers, references, and info about the guests. Colour highlights directed towards potential words or people that needed elaboration if they came up in the conversation (e.g., tinkering).

Hold pre-interviews with potential guests

Once you have a general idea of the episode, it might be helpful to hold a pre-interview with potential guests. Here you can share your idea with the guest, get their feedback, and have explorative conversations about topics that might be interesting to discuss or focus on in the limited timeframe of the recording. Most importantly perhaps is that such a meeting can help build a relationship ahead of recording and ensure that topics discussed feel comfortable to the guest.

Agree on editing structure with involved parties

While you prepare for your recording session, you may want to check in with all involved parties about a potential editing pipeline. For instance, when and how will hosts, guests, and other team members be able to review and approve the recorded episode? Who will be responsible for the content edits (e.g., producer, editor, or host)?

Producer

Coordinate recording space, time, and organise accommodation/food if necessary

With equipment in place and content scripts ready to go, it is time for the producer to take over the administrative part. This may include booking the room or studio, finding a time that works on everyone's schedule, and taking care of amenities for the recording session.

Tip: Shared lunch or coffee/cake ahead of recording can loosen the atmosphere and support a more informal environment.

Recording

Technician

To ensure everything is running smoothly and that you have time enough to fix any arising issue, always plan in a 30 minutes to an hour long preparation time before the beginning of the actual recording. If you haven't done a test session before, you want to add at least twice as much time.

1. Plan the room (refer to previous section p. 16-20).
2. Set up microphones. Microphones have different polar patterns. Polar patterns inform you on the sensitivity of the microphone based on its angle to the sound source. It means that direction matters! You want a speaker to be within the range of his own microphone (usually facing it), while avoiding overlap between the different microphones.
3. Seat everyone, adjust microphones and explain basic principles of recording. Help the guests get comfortable with some breathing and talking exercises.
4. Levelling (refer to previous section too).
5. Before officially starting, record 1-2 minutes of **room sound** (no speaking). This will help the editor manage noise in post production.
6. Extra: If you want an "atmosphere", plan an extra mic for the same purpose, but record the whole session away from the speakers.

During recording, take an active role. Keep track of the levels as speakers move and get more comfortable, interrupt if necessary. If you have an external device (e.g., small keyboard), you can easily mark on the fly where edits will be needed. This will make the editor's job a lot easier, especially if it is not the same person.

Host

Pre-Recording: Setting norms and expectations

Recording and podcasting is a very special environment and most guests will have little or no experience with the norms and expectations of this space. As a host, you can facilitate a conversation about norms and expectations ahead of a recording session (so it is fresh in everyone's mind).

Before pressing the record button, discuss how you will:

- have breaks (and how one can signal break needs)
- communicate tech and sound issues
- rephrase sections that were unclear
- restart after a break (e.g., clap sound)
- interrupt each other (e.g., to jump in to ask someone to elaborate before continuing).
- take notes for editing (and who will do this)
- refer to each other in the podcast (e.g., first name)

Post-recording

Leave time at the end of your recording time for a debrief with all participants. Does anything need to be cut already? Were there parts that worked well/not so well? Did you forget to define an important concept? Should you re-record a section? Are there any discussion points that need to be addressed in the Show Notes (e.g., providing references)? Before parting, ensure that everyone has understood the post-production process.

Post-Production

Editor (Content/Sound)

Editing will be the step that will transform your podcast from a homemade audiolog into a professional product ready to be distributed. It is probably the step that will take the most time, but also require the most knowledge and experience. If you decide to do it yourself, there are plenty of guides online, depending on your Digital Audio Workstation (DAW). For a general and agnostic presentation of the editing workflow, see this buzzsprout guide to podcast editing. Without getting too technical, we will list below some ideas to keep in mind.

You can separate edits into two categories: **content (or semantic) edits**, and **form (or cosmetic) edits**. Content edits will be focused on restructuring the conversation between the speakers to elaborate the narrative of your episode. For example, you might want to move the definition of a concept before it is used. Maybe you agreed with the guest on removing a snippet that was too technical, or that felt embarrassing? Cosmetic edits refer to these small changes that will not transform your discourse, but make it more engaging. You will probably want to remove awkward silences, excessive "hmmmm", "sooo", "I mean …", clicks, gargles and other mouth mishaps. **Note**: Don't abuse this kind of edits, mouth mishaps are part of natural human speech. Cut too much and you'll sound like a chatbot.

It is useful to rely on a **punch-list**, especially when editing is a team effort. The latter should list content edits with timestamp, action, and rough content. Timestamps need to be precise to the second to accommodate the fast tempo of human speech.
For example:

CUT	*[00:30:25] - [00:31:58]*	*"And as Peter mentioned […] yeah, that's it."*
MOVE	*[01:02:30] - [01:05:18]*	*"Tinkering is the practice of [...] but mostly, empowerment." TO [00:55:20] BEFORE "I wasn't thinking of tinkering…"*
CUT	[01:06:03]	mouth click before *"And I knew that …"*

To enact your punch-list, you will have to learn how to **split**, **cut, copy** and **move** sound files in your DAW.

Protip: If you are working with multiple audio tracks (e.g, one track per voice), remember to do it on **all tracks at the same time**. If you don't, you risk to desync the tracks. This can create an artificial **reverb** or **echo** that will affect the voice.

After edits, we are entering what is more traditionally referred to as **mixing**. First, we should discuss "cleaning the sound". Here, we get back to the idea of **optimising the signal-to-noise ratio**: you want to make the voices loud and clear, with as little noise and artefacts as possible. Remember that sounds are waves with **amplitude** (how weak or strong) and **frequency** (how fast or slow). To clean the sound means to use tools that will affect these properties. At the very least, you will need to learn how to use the following effects (follow the links for more details):

- Gate: the gate allows you to set a **threshold** on the amplitude of your track. Any sound below that threshold will be eliminated (or reduced), while sounds above will be unaffected. You can use a gate to get rid of artefacts that cannot be easily isolated and edited out, like the constant hum of traffic. The game is to set the threshold to a value that eliminates noise without affecting the voice too much. If you record in noisy conditions, don't expect this to be easy. Always **put the gate first** to avoid amplifying the noise with other tools (especially compressors).
- Equalizer: An equalizer (EQ) allows you to **increase or decrease the amplitude at a specific range of frequencies**. In a podcasting context, you will mostly use one to attenuate the amplitude at both ends of the spectrum which are not carrying much information in human voices. Sometimes, for a myriad of reasons, a specific frequency may resonate irritatingly. You can use an EQ to hunt it down and eliminate it. At last, you can use an EQ to artificially boost a voice by increasing a certain range (often upper-bass or lower midrange) and make it sound "full".

- Compressor: The compressor is probably the hardest to understand and master in the basic mixing toolset. Within your track, there are moments when your guest speaks louder and moments when they are quieter, sometimes within the same sentence. This is especially true if they move a lot relative to their microphone. A compressor lets you **set a threshold to normalise the amplitude along the track**. Signals louder than the threshold will be reduced while signals below will be increased.
- Limiter: A limiter is a simple way to **control the maximum volume of a track** and therefore **avoid clipping** (when the amplitude is above the maximum possible volume, leading to a loss of information). Like with the compressor, you can set a threshold on the amplitude of a track. Anytime the signal trespasses this threshold, it is brought down to its level.

These tools are most often called **effects** in DAWs, but each DAW has its own interface with its own quirkiness. If it is better to understand the concept behind an effect before playing with it, you'll need to familiarise with its DAW-specific incarnation. It shouldn't be too hard to find online resources (on youtube search for: DAW EFFECT *tutorial*).

Protip: If you are working with multiple audio tracks (e.g, one track per voice), remember to do it **one track at a time**. Each voice has its own specificities, each person was sitting in a different place (with a different acoustic), each microphone has its own small fabrication defects. Therefore each track will need a unique treatment. When you work on one track, remember to **mute** the others.

Protip 2: Keep in mind that most often, transformations applied to a track are sequential, and therefore, **order of the effects in your effect chain matters**.

After "cleaning" the sound, you may want to add some extra steps to embellish it. This will involve some new tools:

1. **Normalise the levels** across the tracks to make sure that **everyone is equally loud**. Effects applied to a track should have a **gain** parameter. This allows you to control the **volume of the track after the effect was applied**. Ideally, you'll want to fine tune the gain of the last effect in your effect chain to bring all tracks to a similar level, otherwise, the results might be unexpected. To do that, you should mostly use your ears, but you can also use a **Spectrum Analyzer** tool. In that case, you'll have 2 different measures to keep track of: **RMS (Root Mean Square)**, the average volume in a given time-window, and **Peak Loudness (PL)**, the maximum volume of a track. Just make sure that your RMS is approximately equal in time and across tracks, and that your PL doesn't lead to clipping. This is the one obligatory step in this post-cleaning section. If you are happy with the results, by all means, you can stop here.

2. Use a **reverb** to blend the tracks together. A reverb is a tool that **simulates the acoustic of a space**. This is especially important if you recorded some snippets at different times and/or in different places to homogenise the recordings. Otherwise, **use it sparsely**, you already recorded in a room with its own acoustic properties. However, it can still help mitigate some acoustic differences that emerged between the tracks during the previous mixing steps. For more details, check this guide to understanding Reverb and these 5 tips for better reverbs.

3. Use a **panning** tool to position your speakers in space. Panning lets you **change the stereo balance** of a track. Concretely, you can make a track louder on the Left or on the Right of the **stereo field** (think in the left or right ear of your headphones). Don't be too heavy-handed with panning, **it can cause issues to listeners using mono devices** (e.g., phone speaker, boom box, old radio). Usually, a few percent (0 to 10) Right or Left is already enough to give the illusion of space. With a 3 speakers set up, you can try: Guest 1 set 5% to the Left, Guest 2 set 5% to the Right, and the Host set exactly in the Center.

If you've come all the way up to here, you should have a decent result, but not quite ready to be published. One problem you might have is volume: at equal volume on a

given device, your podcast sounds much quieter than others. That's when **mastering** enters the scene. Mastering is the total control of the **Dynamic Range** of a recording. Through a subtle game of **compressors**, **limiters** and **gain** control, a mastering engineer brings the mix to be as loud as possible, yet keeps it clear. Mastering has become a complex discipline as a result of the loudness war, and therefore good work requires years of experience and practice. Just do your best using the tools you've learned during mixing. The internet is full of *"mastering tricks"* you can try on your mix, though most resources will be tailored to music production. There also exist automatic mastering tools online. If you decide to use one, keep in mind that they are usually tailored to music, and even specific music genres.

Another aspect of mastering is to keep the acoustics of all parts of a unit consistent (e.g., all songs on an album should have the same "atmosphere"). For you, it mostly means **keeping the same volume across episodes**. If you have the possibilities to edit multiple episodes before the release schedule, be mindful of that. Nobody likes sudden volume changes when starting a new episode (especially if it gets suddenly much louder).

Producer

Coordinate episode approval with host(s) and guest(s)

Once the editor has finished all content edits and cuts, send out the episode to all guests/hosts to review, suggest edits and approve a final version. Invite reviewers to send you their edits with timestamps and reasoning for why or how they would like something to be cut (e.g., [00:03:25-00:04:59 - Cut). Review their suggestion and if necessary discuss with them and the editor how to solve open-puzzles. Some edits may be difficult to make from an editing standpoint due to differences in speech patterns (e.g., removing a word in the middle of a sentence without ruining its flow).

Content Creator

Create Show Notes for each Episode

Podcast Show Notes are a document or blog post linked to your podcast episode that give an overview of the topics discussed and/or provide links to resources mentioned. Especially for research podcasts, they are important source material to help the listener dig deeper into the topics and themes discussed. Think of them as your references section in a publication. To get an idea of how you could structure your podcast Show Notes, see "How To Write Better Podcast Show Notes (With 3 Templates)" by castos.com or see the Show Notes for the Interacting Minds Podcast.

Write the Episode Summary or Episode Description

You will also need to write a short episode description (1-2 paragraphs) to appear alongside your episode on the available podcast platforms. This description text fulfils some key functions:

- **Episode Blurb:** It gives the listener an overview of what the episode is about
- **Call to Action:** It provides information on where to find Show Notes and learn more about the podcast (e.g., podcast webpage)
- **Search-Engine-Optimization:** It is used by search engines to help listeners find your podcast among their library.

Publishing/Release

Producer

Setup your podcast on a Hosting Site

Before you can release your first episode, you need to set up your podcast on your chosen podcast hosting platform. In most cases, you will need to submit a podcast name, a short description, an image as your podcast artwork, the artist name, the language(s) which is spoken, and contact information on how to reach you. Most podcast directories also organise their library based on subject categories. Apple Podcast, for example, offers more than 100 categories and subcategories. To optimise how new audiences can discover your podcast via the search functions of popular podcast directories, you need to link your show to a given category (e.g., social sciences, educational). Additionally you may want to add host(s) biographies to the podcast site, so people can learn more about who your hosts are.

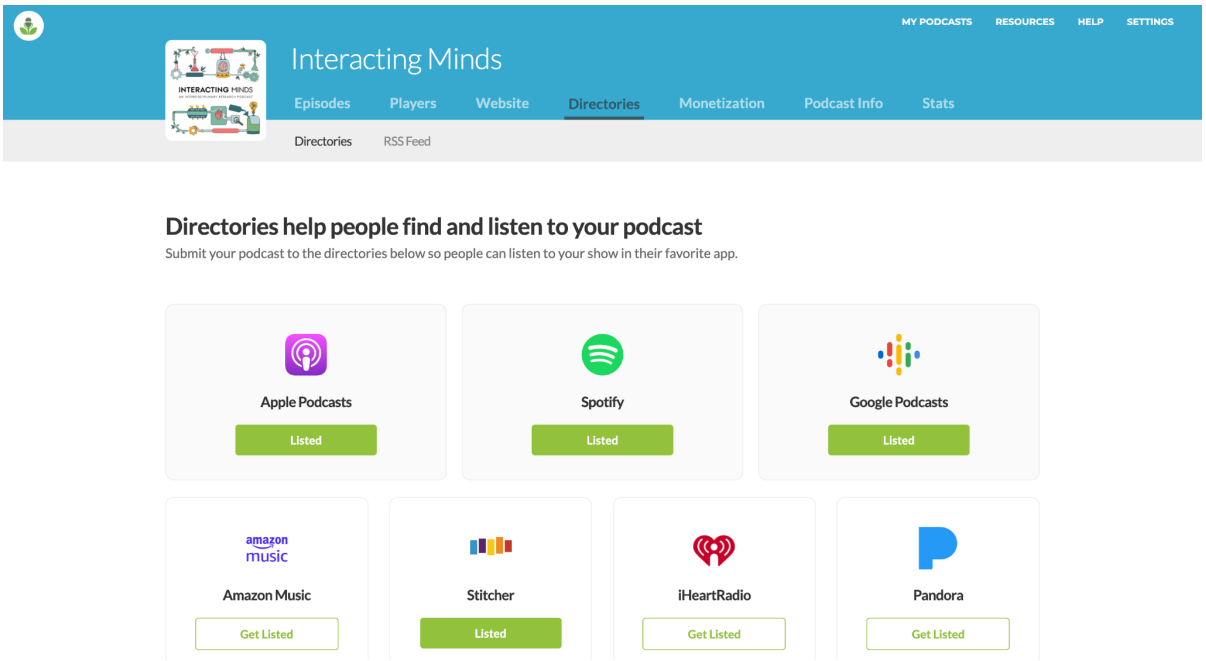
Upload your first Episode

Once your general setup is complete, you can upload your first episode. For this, have your title and description ready (created by the content creator in the previous step). If applicable, you may also add Chapter Markers to your episode or extract a soundbite for advertisement on social media. Note that although it might be tempting to immediately press publish, it can be helpful to time when your hosting service releases your episode. Depending on the time and day, you will receive different traction on social media and on podcasting platforms. So research what time and days are most appropriate for your target audience and time zone.

Getting listed in Apple Podcast, Google Podcast, and Spotify

Once you have set up your podcast and your first episode, it is time to connect to podcasting directories of your choice. For this, most hosting sites offer a *directories* tab in which you can pick and choose what to connect to (e.g., image below from Buzzsprout). For Apple Podcast and Spotify you will need to login to an existing account or create a new one. Once you are logged in, you can set up a creator account. Following this, you can submit your podcast via your RSS URL (in Buzzsprout you will

be taking through these steps when clicking on a given directory). In some cases, you might experience a delay of up to 5 working days to be approved. Also keep in mind that changes in your hosting account may take a few hours to be visible elsewhere. For instance, if you accidentally misspelt your podcast name and changed it upon noticing it, it will take up to 24 hours until you can see your correction in Spotify.



Advertise via social media or other networks

Big congratulations! You released your first episode! Now, let's ensure that you gain followers and downloads (if this is something you want/aim for).

- **Step 1. Email the final version to any guests and production team and inform them about the release date.** Not everyone will be involved in the post-production phase of the podcast. Depending on your process, guests might have had an unmastered version to review for approval and thus have never engaged with the final product. So it is nice to give them a heads up where they can find the complete episode. Keeping them in the loop about release dates is also helpful to draw on their networks to advertise. If they have a social media following, you may reach a broader audience merely through notifying them.

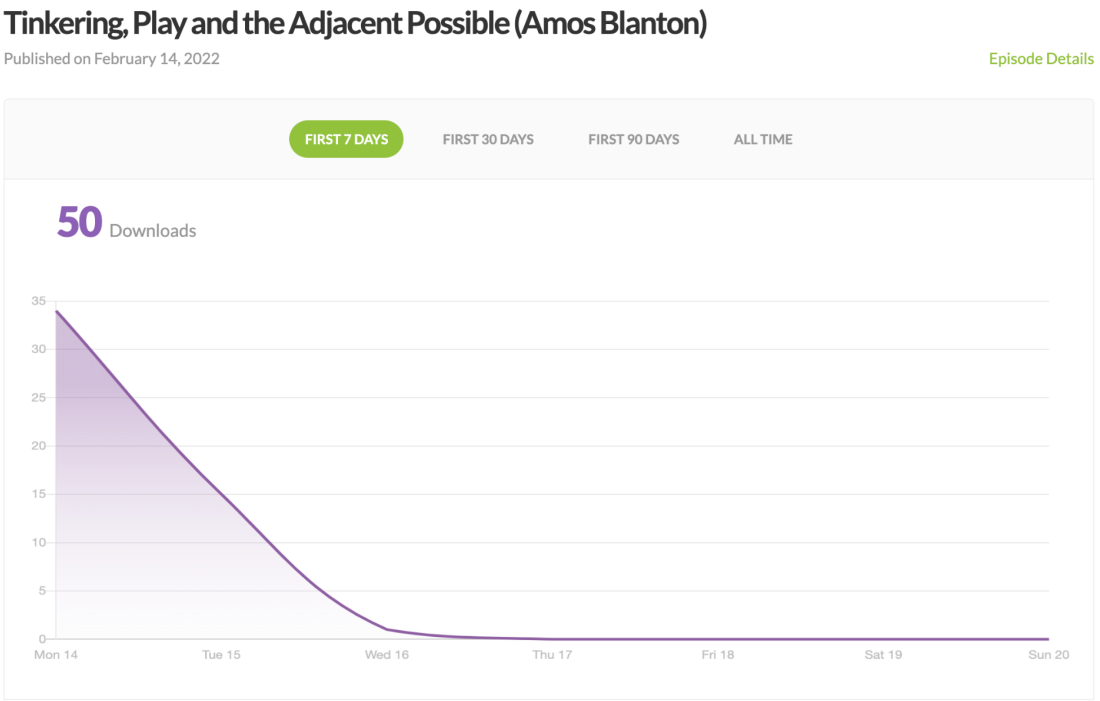
- **Step 2: Identify platforms and networks to advertise to.** This is something you likely already have considered when identifying your key target audience. Yet a second browse can't hurt. In the case of Aarhus University, you can draw on AUs marketing team for help. You could list your podcast as part of the AU podcast list (https://www.au.dk/podcasts/) or ask your local centre to add the podcast as a News item to their webpage. If unsure who to contact, ask your local administration for tips on who to contact within the communication team.

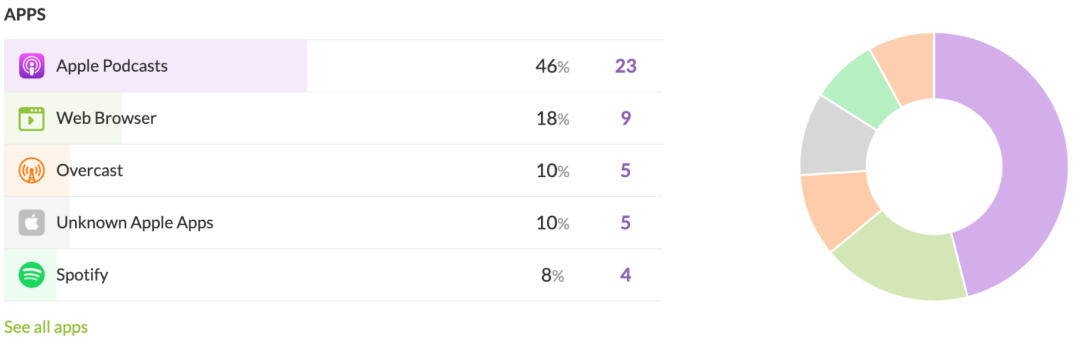
- **Step 3: Create small episode extracts to share Sneak Peaks.**

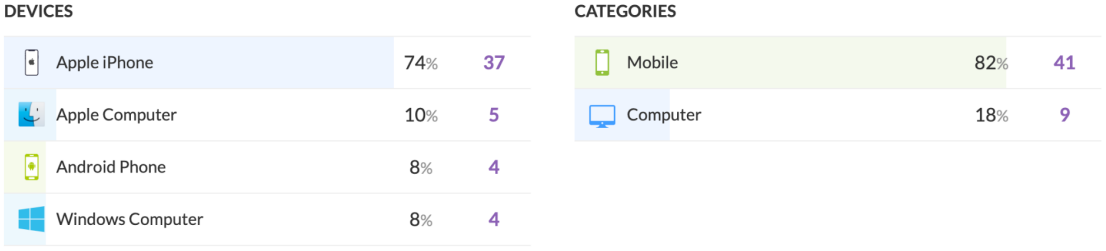
Either in your editing software or through available tools in your hosting site, create small engaging extracts of your episode (max. 1min long) to give people a feel for the podcast. Simply sharing the episode is also an option, yet most podcasts spend the first 5 mins with intro and getting into the episode topic. Extracts from the middle have a tendency to be bolder and invite audiences to wonder what might have been the context and conversation that provoked such a statement.

- **Step 4: Track stats to understand your audience and adjust your strategy accordingly.** All common hosting platforms offer episodes and overall statistics to let you understand your audiences better. To give you an idea on how you may adjust your strategy based on your data, see an example from the Interacting Minds Podcast data below. The screenshots stem from the Stats Tab in Buzzsprout and show the available data in the morning 3 days after release of the episode. If looking only exclusively at the example episode, we can learn from our data that most downloads occur during the Danish evening and night time, which may partly be explained by the considerable large percentile of US-based listeners that engage with this specific episode. Yet, also Danish audiences seem to download episodes more in the evening than during the day.

A trend that is also consistent across published episodes. The same applies to the share Apple Podcast listeners hold across our episodes. Such information can aid us to test out different release and marketing times for future releases. For instance, would we receive further engagement if we announced a new episode at 20.00 Danish time?







COUNTRIES / TERRITORIES (15 Total)

United States	30 %	15
Denmark	24 %	12
Germany	8 %	4
United Kingdom	6 %	3
Canada	4 %	2
Japan	4 %	2
Netherlands	4 %	2
China	4 %	2
Switzerland	4 %	2
South Africa	2 %	1

See all countries

CITIES (29 Total)

Aarhus, Central Jutland	23 %	10
Lakeland, Florida	4 %	2
Oakland, California	4 %	2
Melrose, Massachusetts	4 %	2
Basel, Basel-City	4 %	2
Portland, Oregon	2 %	1
Toronto, Ontario	2 %	1
Pretoria, Gauteng	2 %	1
Hayward, California	2 %	1
Leeds, Leeds	2 %	1

See all cities

IMC related resources

Contact: Kirsi Tilk - Professional Musician and Podcast Editor

Kirsi Tilk is an Estonian guitarist, composer, musician, teacher and podcast producer currently living in Aarhus, Denmark. Next to her work on Interacting Minds, she is the host, editor and producer of the podcast Feminist Talks that is part of the Inequality Talks collection by Mellemfolkeligt Samvirke (Aarhus). To get in touch or learn more about Kirsi's work, write to her on kirsitilkmusic@gmail.com or visit https://kirsitilk.com/.

Podcast Studio at Aarhus University Press

Aarhus University Press offers the opportunity to rent their "Videnlyds" podcast Studio and get some technical help from their experienced team. The studio has a professional sound setup, four microphones, and the option to play sound clips directly in the recording. You can rent the studio both on weekdays and weekends. Costs are:

- Studio for DKK 1,000 / hour
- Studio with technical assistance (DKK 1,500 / hour) - where a producer from Videnslyd is responsible for the recording and export of audio files afterwards.

The Videnlyds team also supports full podcast projects for AU researchers and can assist with the full production (incl. concept, editing and distribution). For further information, contact Anne Engedal via https://en.unipress.dk/kontakt/.

Aarhus studenter radio

If you are a student at Aarhus University, consider joining the student radio association: https://aasr.dk/ . You will get access to a full fledged studio and a hosting platform. Your program can even be played on the FM band (98.7) in Aarhus, live or pre-recorded.

Interacting Minds Podcast Equipment

3 x Røde PodMics with tripods
Dynamic Microphone for Speech and Recording

- Optimised for applications using speech
- Directional characteristic: Cardioid
- Frequency response: 50 - 13,000 Hz
- Double-layered pop protection grille from stainless steel
- Internal pop filter
- Robust all-metal housing with scratch-resistant ceramic cover
- Integrated swing mount
- XLR connector
- Dimensions: 172 x 109 x 62 mm
- Weight: 937g

3 x Sets of Pop Filters (incl. 1x nylon filter, 1x foam filter and 1x metal filter)

Note: Pop Filters have a perceivable impact on the sound (especially keeping consonants in check after compression). Pop Filters also allow for better hygiene. You avoid people sucking on the mic, and they're a lot easier to clean. There's 2 types: mesh and metal. For most podcasting setups metal is the easier to use - they're sturdier and easier to clean.

	**4 x XLR female to male Cables** Cordial CTM 3 FM-BK - professional 1.5m microphone cable, male->female XLR, Neutrik connectors.
  	**1 x Zoom H6 Portable 6-Track Audio Recorder** Max. recording quality: 24 bit / 96 kHz Record up to 6 channels simultaneously Y/Y microphone capsule XYH-6 4 x Mic / Line input (XLR / TRS combo socket) Integrated 2-6 channel USB audio-interface Supports SD cards up to 32 GB Stereo line output (3.5 mm jack) Stereo headphone output (3.5 mm jack) Power supply via 4x AA batteries or USB Headphones