

“It’s mostly a one-way street, to be honest”: the subjective relevance of public engagement in the science communication of professional university communicators

Supplementary material

Appendix A: Overview interviewees per university (N = 29)

	University	n	%
University of Technology	University of Technology 1	8	27.6
	University of Technology 2	3	10.3
Fully University	Full University 1	5	17.2
	Full University 2	3	10.3
	Full University 3	2	6.9
	Full University 4	1	3.4
	Full University 5	1	3.4
	Full University 6	1	3.4
Medical School	Medical School 1	4	13.8
	Medical School 2	1	3.4

Appendix B: Question complexes of the interview guide that relate to public engagement

Science Communication Activities (in general)	<ul style="list-style-type: none"> • What do you understand by science communication? (inquire deeper) • What science communication activities do you conduct in your daily work? • What importance do the activities mentioned have in your daily work? • When you think of science communication, what role do you see for the public? <ul style="list-style-type: none"> ◦ Should the public take an active part in this? Why?
Understanding of Public Engagement	<p>[Transition from general scicomm activities to PE]</p> <ul style="list-style-type: none"> • When you think of science communication, what does public engagement mean to you? (inquire deeper) • What importance does public engagement have for your daily work?
Formats, Challenges, and Objectives of Public Engagement	<p>[Back reference to scicomm activities]</p> <p>Definition: Participation of the public with scientific topics or involvement of the public in science communication]</p> <ul style="list-style-type: none"> • Which science communication activities count as public engagement in your view? <ul style="list-style-type: none"> ◦ Which activities/formats are particularly suitable for public engagement in your view? Why?

	<ul style="list-style-type: none"> ○ What challenges can be associated with public engagement? [Give concrete examples] <p><i>[Instruction: If no public engagement formats are actively used/integrated, ask again about public engagement formats for scientific content. If no formats are still mentioned, then refer to science communication activities in general in the following questions instead of public engagement.]</i></p> <ul style="list-style-type: none"> ● Which formats do you use for public engagement? <ul style="list-style-type: none"> ○ What goals are you pursuing with these? ○ What roles do KPIs/key figures play in this? <ul style="list-style-type: none"> ○ Which other actors are involved in your public engagement formats? ○ Which other actors are you reliant on in this regard? In what way?
<p>Role of the Public and Public Online Engagement</p>	<ul style="list-style-type: none"> ● Which target groups do you primarily address with public engagement formats? <ul style="list-style-type: none"> ○ Who do you reach with these formats? Can you give concrete examples? ○ From your point of view, what makes participants/users interact with the content? ○ How do interactions with the public differ in social media compared to offline formats? <ul style="list-style-type: none"> ○ What opportunities/risks are offered online?
<p>Experiences with Public Engagement</p>	<p><i>[Experience in relation to public engagement (critical incident technique)]</i></p> <p>Talk about a situation regarding public engagement that has remained in your memory. Please describe this concrete situation as precisely as possible.</p> <ul style="list-style-type: none"> ● Why was this situation particularly memorable? ● What influence did this situation have on future considerations regarding engagement? ● What consequences did you observe for yourself and your work?
<p>Closing</p>	<p>I don't have any more questions so far. Is there anything else that has occurred to you or that I haven't mentioned?</p>

Appendix C: Category system for the coding of interviews

Category	Description	Coding Rule	Anchor Example
Science Communication	The subcategories pertain to the interviewees' understanding of science communication, science communication activities, and the significance of science communication.		
Science Communication Understanding	This category refers to the interviewee's own conceptual understanding of science communication.	<ul style="list-style-type: none"> • Code all statements where the interviewees articulate their understanding of science communication. • This understanding can pertain to their general understanding of science communication and science communication in the context of their own work. • Phrases such as "I understand science communication as," "Science communication is," and "By science communication, I mean"... can serve as guides. • This also includes statements about what science communication is not (e.g., "Science communication is not XY") and the differentiation of science communication from other areas. 	<p><i>"On the one hand, in translation, when it needs to be done quickly, let's say. But I prefer motivating scientists or giving them the skills and competencies to communicate on their own. So, no matter how well I can explain things myself, it's even better if they can explain it well themselves, and ideally, it's not shot down from the ivory tower, neither by the scientists nor by me. Instead, it's communication that is not a one-way street."</i> (I17, decentralized)</p> <p><i>"(...) So, I would understand it as—what I've probably already explained at the beginning—that, on the one hand, we are communicating what science is being done here. On the other hand, it would actually also mean scientists who communicate. This can be on social media, in blogs, but also in our magazine."</i> (I16, centralized)</p>
Science Communication Importance	The significance of science communication relates to the importance and priority that the interviewees assign to science communication in their daily work. It addresses how much the interviewees regard science communication as important and relevant in their daily activities.	<ul style="list-style-type: none"> • Code all statements where the interviewees describe the significance of science communication in their daily work. • This can include concrete numerical values or descriptive terms (e.g., very present, less present, etc.). 	<p><i>"Highly important. Number One?"</i> (I17, decentralized).</p> <p><i>"It would be about 60 percent. If I'm really taking science communication as writing or illustrating these topics, then it accounts for around 60 percent."</i> (I24, centralized)</p> <p><i>"I'll try to simplify it by using numbers. We issue about 200 press releases a year, and 120 to 150 of those are on scientific topics."</i> (I10, centralized, head)</p>

<p>Science Communication Activities</p>	<p>Science communication activities refer to measures and initiatives to make scientific knowledge and information accessible to a broader audience. This can occur through various forms of communication. This category targets those activities and formats that the interviewees employ in their day-to-day work.</p>	<ul style="list-style-type: none"> • Code all statements where the interviewees describe the science communication activities they undertake in their daily work. This can include activities like press releases, events, etc. Focus on the interviewees' descriptions and what they consider to be part of their science communication activities. • Ensure the entire text segment is coded as a unit of meaning related to science communication activities. This includes follow-up questions and answers until a new unit of meaning focusing on a different topic is addressed. • Science communication activities should only be coded after the question about these activities is asked. 	<p><i>“Typically, this involves writing announcements and also writing articles for our own websites or communication tools, like social media, newsletters, events, organizing something like a science slam, outreach materials, and so on.”</i> (117, decentralized)</p> <p><i>“Writing press releases. Magazine articles. We also report on research on social media or let the scientists communicate directly through video contributions.”</i> (116, decentralized)</p> <p><i>“This encompasses the entire range from informing about current activities on the website, from guest lectures to field trips, showing how the operation runs and what topics are being worked on. It also includes what is then a bigger but rarer topic: the preparation of actual press releases. And accompanying efforts in social media, which mainly aim to generate interest rather than just transmitting information.”</i> (121, decentralized)</p>
<p>Role of the Public in Science Communication</p>	<p>The role of the public in science communication examines the significance attributed to the public by professional science communicators. This category aims to understand the image professional communicators have of the public in the science communication process, focusing primarily on the general public.</p>	<ul style="list-style-type: none"> • Code all statements where the professional university communicators describe the role of the public in the science communication process. • Focus on the significance that interviewees attribute to the public in this context. • Capture statements that discuss both the relevance attributed to the public in science communication and the image of the public in this process. 	<p><i>“In the public sphere, well, you always hope that people will accept things, definitely also question them, certainly. But do not get influenced by what I'd call conspiracy theories or things like that, where you wonder, 'Where did that come from?' Totally out of thin air, kind of. The public has to want it.”</i> (122, decentralized)</p>
<p>Public Engagement</p>	<p>Participation of the public with scientific topics or involvement of the public in science communication.</p>		

Meaning of Public Engagement			
Understanding of Public Engagement	Own understanding of public engagement of the interviewees.	<ul style="list-style-type: none"> • Code all statements in which interviewees explain their understanding of engagement. This understanding can relate to their understanding of public engagement in general or their understanding of public engagement for their own work. • Formulations such as “I understand (public) engagement as,” “(Public) engagement is,” and “By (public) engagement, I mean” can serve as a guide. • Only those excerpts that directly follow the question about understanding will be coded. It will also be coded if the term public engagement is unknown. 	<p><i>“What does it mean? Engagement? (...) No, I actually haven’t heard that.” (I23, decentralized)</i></p> <p><i>“(…) Yes, so in what we do, it is of course important that such engagement actually becomes an interplay between society and the university, mutually enriching each other and breaking away from the one-way direction we used to have.” (I25, centralized, head)</i></p>
Understanding Public Engagement Formats	This category includes those activities and formats that the interviewees generally classify as engagement activities.	<ul style="list-style-type: none"> • Code all statements in which interviewees describe activities they count as public engagement. • It is about the activities and formats that interviewees mention when explicitly asked about public engagement formats. • Interviewees may also mention their own formats here; these should be coded under both “Understanding Public Engagement Formats” and “Own Public Engagement Formats.” 	<p><i>“There used to be the University Night, which was intended to get direct feedback immediately from people on their own research questions or topics.” (I18, centralized, head)</i></p>
Importance of Public Engagement	This category refers to the significance and priority that interviewees give to public engagement in their daily work. It is about how much the interviewees consider public engagement meaningful and relevant in their daily work.	<ul style="list-style-type: none"> • Code all statements in which interviewees describe the importance of engagement for their daily work. • This can include the mention of specific numerical values and descriptions of the importance in words (e.g., very present, less present, etc.). • Statements about the importance of public engagement will only be coded following the question, “What is the significance of public engagement for your daily work?” 	<p><i>“And I think anyone who hasn’t done that has always missed out on certain things or simply couldn’t do certain things in the past. So, I would say it’s a basic prerequisite.” (I10, centralized, head)</i></p> <p><i>“None. I don’t do that. We don’t have the capacity for it.” (I2, decentralized)</i></p>

<p>Objectives of Public Engagement</p>	<p>This category refers to the desired outcomes or objectives the interviewees aim to achieve with public engagement.</p>	<ul style="list-style-type: none"> • Code all statements in which interviewees discuss the objectives they pursue with their public engagement formats. • These statements are primarily located behind the question: “What objectives do you pursue with these (your own public engagement formats)?” • However, objectives may also be mentioned elsewhere. If it is clear that it is an objective of public engagement (see example anchors), it should be coded. • This can also apply to objectives that interviewees pursue with a specific platform (e.g., community building via Instagram). 	<p><i>“Because one of our main objectives is to abolish this ivory tower thinking and make science accessible and appealing to everyone. Just explaining things is really important to us.” (I23, decentralized)</i></p> <p><i>“The objective, I think, is to really embed the university in people’s consciousness. It’s an objective for the organization, but it’s also an objective to bring people into contact with science and ensure that this somewhat inaccessible area can reach a broader audience.” (I4, centralized, head)</i></p>
<p>Possibilities of Public Engagement</p>	<p>This category refers to the chances and possibilities that the interviewees see in public engagement.</p>	<ul style="list-style-type: none"> • Code all statements in which interviewees discuss opportunities in public engagement. This can refer to various aspects of public engagement. • Code all text segments that relate to opportunities with public engagement. • Code all statements in which interviewees mention social media opportunities for public engagement. 	<p><i>“When you bring people together, it usually yields great benefits. (...) Something like that is amazing for a change in perspective, even if you come with something completely unfamiliar and see that it can still have an impact.” (I7, centralized)</i></p>
<p>Barriers to Public Engagement</p>	<p>This category refers to the difficulties and challenges the interviewees see in public engagement.</p>	<ul style="list-style-type: none"> • Code all statements in which interviewees discuss barriers to public engagement. This can refer to various aspects of public engagement. • Code all text segments related to challenges with public engagement/barriers. • Code all statements in which interviewees mention the risks/challenges of social media for public engagement. 	<p><i>“The problems are, on the one hand, the straightforward issue that it raises expectations. That participation is demanded, which we sometimes cannot fulfill.” (I22, decentralized)</i></p> <p><i>“It can happen that you create a wonderful format, you’ve gotten some great scientists to participate, and then nobody shows up.” (I4, centralized, head)</i></p>
<p>Formats</p>			
<p>Suitable Public Engagement Formats</p>	<p>This category refers to activities and initiatives designed to actively involve the public and thus enable participation in scientific topics. This can</p>	<ul style="list-style-type: none"> • Code all statements in which interviewees list formats and activities they consider particularly suitable for public engagement. • Statements must clearly indicate that interviewees consider these formats particularly suitable. 	<p><i>“What really works well are lecture series, honestly. This old-fashioned format is still effective because the public perceives science or scientists as good sources of information. We still have full houses when we implement something like that.” (I22, decentralized)</i></p>

	<p>be done through various forms of communication. This category includes those public engagement activities and formats that interviewees consider particularly suitable for participation.</p>		<p><i>“It’s usually on-site events. Sure, digital possibilities exist, but the first thing that comes to mind is various event formats designed to facilitate exchanges.”</i> (I6, decentralized)</p> <p><i>“I’d say the very best are activities that happen in person, activities that also inspire physical engagement.”</i> (I24, centralized)</p>
<p>Own Public Engagement Formats</p>	<p>This category focuses on those engagement activities and formats the interviewees implement and use in their daily work.</p>	<ul style="list-style-type: none"> • Code all statements in which interviewees describe the engagement formats/participation formats they perform in their daily work. • It is about the interviewees’ own descriptions and what they include. • Code all statements about formats, showing that they are interaction and participation activities. • Code the entire text segment as a sense unit that relates to the formats/activities. This also includes follow-up questions and answers until a new sense unit focuses on a different topic. 	<p><i>“We recently had a real lab pilot project, a new digital collection service for electronic devices where citizens were actually the participants. Without their involvement, we couldn’t have gathered any data. So, what do you call that? Smart service project? No, pilot projects. That’s what we’re currently doing for participation.”</i> (I23, decentralized)</p> <p><i>“Then there’s the classic open house day or lecture series, where we try to include a strong practical component. And more recently, well, for four or five years now, everything in the social media sector, which is also working quite well.”</i> (I10, centralized, head)</p> <p><i>“Most things happen in some form of collaboration with scientists. We always depend on getting content from someone. Whether it’s a classic talk or a science slam. Sure, a trade fair visit also needs to be content-rich. So, it’s always done in collaboration with researchers.”</i> (I6, decentralized)</p>
<p>Actors in Public Engagement</p>	<p>This refers to the reliance on other actors in public engagement formats.</p>	<ul style="list-style-type: none"> • Code all statements in which interviewees mention other actors they rely on for their engagement formats (e.g., scientists). • This also includes dependencies on the channels of other actors. 	<p><i>“Most things happen in some form of collaboration with scientists. We always depend on getting content from someone. Whether it’s a classic talk or a science slam. Sure, a trade fair visit also needs to be content-rich. So, it’s always done in collaboration with researchers.”</i> (I6, decentralized)</p> <p><i>“Then there’s the classic open house day or lecture series, where we try to include a strong practical component. And more recently, well, for four or five years now, everything in the social media sector, which is also working quite well.”</i> (I10, centralized, head)</p>

<p>Target Groups of Public Engagement</p>	<p>This category includes all actors that professional communicators aim to reach with their public engagement formats. The target groups can differ depending on the format and between various social media platforms.</p>	<ul style="list-style-type: none"> • Code all statements in which interviewees mention their target groups in the context of engagement or participation formats. • These statements can be found in different parts of the transcript, with the mention of the term “target group” or “We want to reach X” serving as indicators. Both the target group and, if mentioned, the format must be clearly indicated in the coded statements. 	<p><i>“Primarily targeting potential students, because like all other universities, we need to ensure we have enough students. That is indeed a vital target group, offering them opportunities to get to know us and engage in dialogue with us. This also involves parents and teachers. (...) Another important target group for our communication, although less participatory, is of course policymakers, to achieve things for the university.” (I27, centralized, head)</i></p> <p><i>“That was really aimed at the broad public. So, the undefined masses.” (I17, decentralized)</i></p>
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Appendix D: Category system with the identified subcategories

Category	Description	Coding Rule	Anchor Example
<p>Objectives of Public Engagement</p>	<p>This category refers to the desired outcomes or objectives that the interviewees aim to achieve with public engagement.</p>	<ul style="list-style-type: none"> • Code all statements in which interviewees discuss the objectives they pursue with their public engagement formats. • These statements are primarily located behind the question: “What objectives do you pursue with these (your own public engagement formats)?” • However, objectives may also be mentioned elsewhere. If it is clear that it is an objective of public engagement (see example anchors), it should be coded. • This can also apply to objectives that interviewees pursue with a specific platform (e.g., community building via Instagram). 	
<p><i>Establishing a Dialogue</i></p>	<p>This category refers to the objective of establishing a dialogue with the public. This also includes statements from the interviewees who mentioned they would like to receive feedback from the target groups through public engagement to understand their target groups better.</p>	<ul style="list-style-type: none"> • For coding instructions, see “Objectives of Public Engagement.” 	<p><i>“So actually interactivity. That they stay on our channels more, of course, but also, yes, to some extent a query about ‘What are you actually interested in?’ and ‘What can we do differently here so that we can reach you better? Because, of course, we also want to serve the topics that interest them now.” (I16, centralized)</i></p> <p><i>“So that these topics are made known in the first place and, ideally, it leads to people engaging with these topics and perhaps also entering into a dialog with the scientists because they have questions, ideas, or are affected by the topics.” (I18, centralized)</i></p>
<p><i>Creating Acceptance</i></p>	<p>This category refers to the objective of lowering the barriers of access to university and science through public engagement by, among other things, increasing transparency through public engagement.</p>	<ul style="list-style-type: none"> • For coding instructions, see “Objectives of Public Engagement.” 	<p><i>“The goal is to bring people into contact with science and to ensure that this area, which has been somewhat inaccessible, can penetrate into a broader target audience, so to speak.” (I4, centralized, head)</i></p>

<p><i>Knowledge Transfer</i></p>	<p>This category includes the objective of transferring knowledge to society through public engagement. Knowledge transfer should also contribute to informed decision-making by the public.</p>	<ul style="list-style-type: none"> For coding instructions, see “Objectives of Public Engagement.” 	<p>“Clearly, the goal is to transfer science to society.” (I15, centralized)</p>
<p><i>Acquisition of Scientific Knowledge</i></p>	<p>This category refers to the objective of enabling the implementation of certain research projects in the first place through engagement (e.g., data collection).</p>	<ul style="list-style-type: none"> For coding instructions, see “Objectives of Public Engagement.” 	<p>“Autonomous vehicles are being developed here, and a dialog should emerge with the people who reside in cities and will have to interact with these autonomous vehicles. So, bringing people together who would not normally meet, to create a benefit for both sides.” (I22, decentralized)</p>
<p><i>Opportunity for Scientists to Observe the Impact of their Work</i></p>	<p>This category includes the fact that researchers can be made aware of the impact of their own work through engagement and the associated interest on the part of the public.</p>	<ul style="list-style-type: none"> For coding instructions, see “Objectives of Public Engagement.” 	<p>“I especially see the impact during the ‘Night of Science’ [open door event], especially for the young researchers, where this conversation and interaction are an incredible boost of motivation for them.” (I1, centralized)</p>
<p><i>Recruit and Retain Young Talent</i></p>	<p>This category refers to the objective of using public engagement to recruit and integrate young scientists. This also includes breaking down traditional gender roles and increasing the attractiveness of STEM subjects for women.</p>	<ul style="list-style-type: none"> For coding instructions, see “Objectives of Public Engagement.” 	<p>“I already mentioned, we also want to bring certain ideas into schools to promote STEM subjects there.” (I25, centralized, head)</p> <p>“To make students aware of the research at the faculty and to kindle an interest in research, in the hope that they might consider taking up a doctoral position.” (I2, decentralized)</p>
<p><i>Fostering Reputation</i></p>	<p>This category refers to achieving positive visibility for the university through public engagement, in that these formats can contribute to drawing attention to the university and its research.</p>	<ul style="list-style-type: none"> For coding instructions, see “Objectives of Public Engagement.” 	<p>“We also use it to advance projects, to network with partners, and to draw attention from policymakers to us. So, this whole range of activities.” (I22, decentralized)</p> <p>“Do good and talk about it, as this ultimately contributes to our reputation when an event is successful. An event is always seen as great when it is well-attended, so we ensure that promoting and filling the event go hand in hand.” (I7, centralized)</p>

<p><i>Fulfill the Requirements of Third Parties</i></p>	<p>This category refers to the objective of fulfilling requirements set by the university's presidency and the pressure from funding bodies to include public engagement in communication.</p>	<ul style="list-style-type: none"> • For coding instructions, see "Objectives of Public Engagement." 	<p><i>"The DFG [German Research Foundation] now almost expects, especially in the field of medicine, that the public is also involved."</i> (112, decentralized)</p>
<p>Barriers to Public Engagement</p>	<p>This category refers to the interviewees' difficulties and challenges in public engagement.</p>	<ul style="list-style-type: none"> • Code all statements in which interviewees discuss barriers to public engagement. This can refer to various aspects of public engagement. • Make sure to code all text segments related to challenges with public engagement/barriers. • Code all statements in which interviewees mention the risks/challenges of social media for public engagement. 	
<p><i>Reliance on Scientists</i></p>	<p>This category refers to the challenges associated with dependence on researchers, as they are considered primarily responsible for public engagement, and professional university communicators rely on their willingness to participate. Dependency also refers to the science communication skills of researchers.</p>	<ul style="list-style-type: none"> • For coding instructions, see "Barriers to Public Engagement." 	<p><i>"In my role, for example, I am always just the mediator; I am not personally involved in research, so I cannot engage, respond, and explain in the way that someone who is currently showing people what they are doing in their lab can. This intermediary role can sometimes be challenging for this engagement, as I or we may not be able to respond, as one should, to truly enter into a dialog."</i> (128, centralized)</p> <p><i>"Well, scientists might not always appreciate it when outsiders interfere with their science. They might not always want interested citizens to point out, like, 'You should do it this way.' 'Why don't you research this?' because, of course, they have their plans for their research."</i> (116, centralized)</p>
<p><i>Lack of Acceptance and Awareness</i></p>	<p>This category refers to the barrier that the public does not necessarily recognize public engagement formats despite great effort involved.</p>	<ul style="list-style-type: none"> • For coding instructions, see "Barriers to Public Engagement." 	<p><i>"There are occasions when I think a topic is really a hit, and then you put a lot of work into it, release it, expecting a huge response, and then nothing happens."</i> (117, decentralized)</p> <p><i>"It's similar when you plan some fantastic formats, and they do not get noticed. Like, you gather, I don't know, ten amazing researchers for a whole weekend, and then only ten people show up on the other side. It comes down to a one-to-one ratio."</i> (17, centralized)</p>

<p><i>Lack of Resources</i></p>	<p>This category covers the limitations imposed by the lack of financial resources and the effort required for public engagement formats.</p>	<ul style="list-style-type: none"> For coding instructions, see “Barriers to Public Engagement.” 	<p><i>“They are very time-consuming. One can do all sorts of things. Everyone undoubtedly has many great ideas, but I think time and resources are often lacking.”</i> (118, centralized, head)</p> <p><i>“Yes, I often hit limits when it comes to budgets.”</i> (15, decentralized)</p>
<p><i>Topic Constraints</i></p>	<p>This category addresses the challenges related to constraints on topics or research fields, as not all areas, such as basic research, are deemed suitable for public engagement.</p>	<ul style="list-style-type: none"> For coding instructions, see “Barriers to Public Engagement.” 	<p><i>“The applications are things that lie far in the future and don’t exist yet. Fundamentally, quantum physics is already in a regular computer, but not what will come in the future, I would say. These are all still things that no one can address significantly because they do not exist yet.”</i> (117, decentralized)</p> <p><i>“And the second thing is that we must ensure, especially since we are a university heavily involved in fundamental research and collaborate significantly with the Max Planck Institutes, that we do not chase the zeitgeist too much.”</i> (11, centralized)</p>
<p><i>Concerns about False Expectations</i></p>	<p>This category pertains to concerns about potential false public expectations regarding the possibilities of involvement. A barrier is seen in the boundaries of involvement.</p>	<ul style="list-style-type: none"> For coding instructions, see “Barriers to Public Engagement.” 	<p><i>“Yes, issues arise when there is meddling in one’s research, even if one has perhaps 30 years of expertise in the field. There might be people saying, ‘It would be much better if.’ It’s probably a matter of politeness in dealing with that. That’s certainly a challenge. (...) And if one cannot demonstrate a direct benefit, these formats can quickly die out. I believe it must be clear to the public that there is a certain added value.”</i> (17, centralized)</p> <p><i>“Yes, the expectations of transparency and information, where the money comes from, what is done with the money, the expectations of accountability and transparency, and the depth of information are becoming higher. Ultimately, because one can talk more about the topic and more people are aware of it. This generates new questions, deeper questions, at which point one has to decide, ‘Where is the limit for us?’”</i> (119, centralized)</p>
<p><i>Voicing Criticism or Hostility</i></p>	<p>This category refers to the fear of negative feedback and hostility related to public engagement, which can affect both the researchers and the organization. This barrier to public engagement is due to concerns about negative social media and offline feedback.</p>	<ul style="list-style-type: none"> For coding instructions, see “Barriers to Public Engagement.” 	<p><i>“Criticism is always possible, and on social media, there can even be backlash. We often deal with sensitive topics on social media and continuously monitor the comments, as it is sometimes necessary to be vigilant. Additionally, we bear the responsibility of accurately conveying information and consulting with the administration on delicate issues.”</i> (126, centralized)</p> <p><i>“That is essentially the point: especially with critical scientific topics,</i></p>

			<i>discussions can emerge that no longer proceed in an orderly manner. There are certain subjects to which the public feels very personally connected.” (I20, decentralized)</i>
<i>Challenges Specific to Social Media</i>	All aspects that are considered to be limiting for public engagement in social media are coded here. These include a lack of interaction with scientific topics, the correct design of Wisskomm for social media, and high competition in social media.	<ul style="list-style-type: none"> For coding instructions, see “Barriers to Public Engagement.” 	<p><i>“This can also lead to quicker reputational damage, especially due to the higher reach, which means that more people become aware of it, and it spreads more rapidly. Consequently, it becomes more challenging to counteract. Once it escalates, it is difficult to contain.” (I2, decentralized)</i></p> <p><i>“Actually, I find that the formats under science communication do not perform very well for us. They do not receive many likes or comments. It appears that these topics do not interest many people.” (I26, centralized)</i></p>
Formats			
Suitable Public Engagement Formats	This category refers to activities and initiatives designed to actively involve the public and thus enable participation in scientific topics. This can be done through various forms of communication. This category includes those public engagement activities and formats that the interviewees consider particularly suitable for participation.	<ul style="list-style-type: none"> Code all statements in which interviewees list formats and activities they consider particularly suitable for public engagement. Statements must indicate that interviewees consider these formats particularly suitable. 	
<i>Offline Events (face-to-face)</i>	This category includes formats considered particularly suitable and help represent events at the university (e.g., dialog events, panel discussions, etc.).	<ul style="list-style-type: none"> For coding instructions, see “Suitable Public Engagement Formats.” 	<p><i>“Generally, these events are held on-site. Of course, digital options are also feasible, but the first thing that comes to mind is various event formats specifically designed to facilitate exchange.” (I6, decentralized)</i></p> <p><i>“I would say that the best events are those that actually take place on-site and involve activities, especially those that encourage physical engagement.” (I25, centralized)</i></p>

<i>Personal Contact with Researchers</i>	This category includes formats that enable personal contact between the researchers and laypersons and are therefore perceived as particularly suitable.	<ul style="list-style-type: none"> For coding instructions, see “Suitable Public Engagement Formats.” 	<p>“By asking three short questions, you can get a quick 15 to 30-second snapshot of a scientist, making them more relatable.” (I15, centralized)</p> <p>“Lecture series, because scientists are perceived by the public as reliable sources of information. Although it is a relatively old-fashioned format, it still works very well for us. We always have a full house when we implement such events.” (I22, decentralized)</p>
<i>Recurrent Events</i>	This category includes formats that are perceived as particularly suitable due to their recurrence and series character.	<ul style="list-style-type: none"> For coding instructions, see “Suitable Public Engagement Formats.” 	<p>“Actually, I think it would be good to have a series that is consistent, allowing for regular exchanges with people.” (I14, centralized)</p>
<i>Events Outside of the University</i>	This category includes formats that are explicitly perceived as suitable due to their location outside the university and a perceived threshold reduction.	<ul style="list-style-type: none"> For coding instructions, see “Suitable Public Engagement Formats.” 	<p>“I think, surprisingly—or perhaps not surprisingly—everything works better when we go out of the university and reach out to people rather than bringing them into the university. Apparently, the university context is still associated with a certain level of threshold anxiety and feelings of shame. It always works well when we go to places where we can engage with people directly.” (I4, centralized, head)</p>
<i>Active Participation</i>	This category includes formats that are perceived as particularly suitable due to their active involvement of the public (e.g., citizen science).	<ul style="list-style-type: none"> For coding instructions, see “Suitable Public Engagement Formats.” 	<p>“I truly believe that citizen science projects are particularly well-suited to engage people. The challenge, I think, is to effectively reach those who are affected by the topic. I believe that this can generate high interest and involvement, encouraging people to participate actively.” (I28, centralized)</p>
<i>Social Media as a Low-threshold Communication Option</i>	This category includes social media formats perceived as particularly suitable for public engagement.	<ul style="list-style-type: none"> For coding instructions, see “Suitable Public Engagement Formats.” 	<p>“The formats need to be location flexible. Regardless of where we are, this threshold anxiety is always present. We see this, at least in social media engagement, particularly with short-form content like on TikTok, Instagram, or YouTube. These platforms allow us to instantly convey information to people who otherwise might not come to the university or our largest lecture hall.” (I1, centralized, head)</p> <p>“And new media are extremely well-suited for this purpose. I can get instant feedback to see if what I am doing is effective or not. Am I engaging people or not? Can I spark a discussion or not?” (I10, centralized, head).</p>