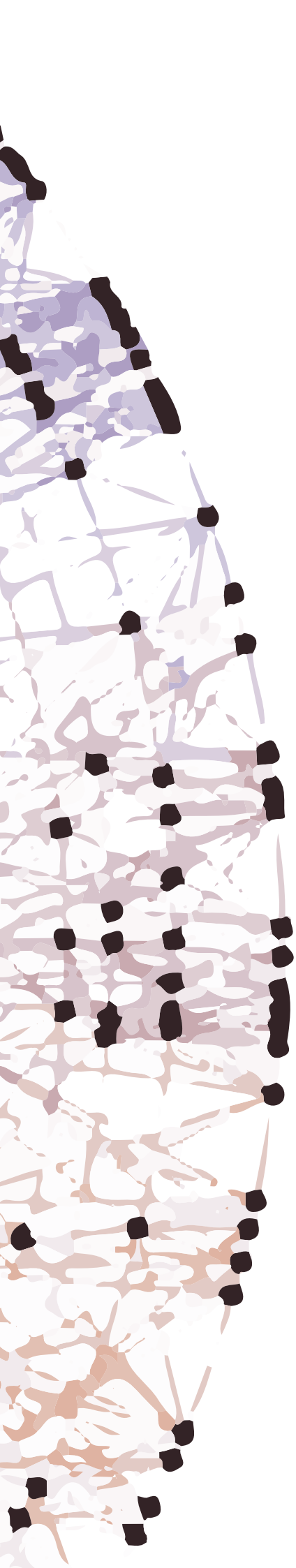


Developing Impact

A guide to effective Dissemination

escience TALK

e-Science projects in Europe, and all over the world, depend on communication.

In a technological sense, they depend the communication between computers through e-infrastructures – networked computers sharing information and processing power, shared yet secure storage, and supercomputers accessible when they're needed. But e-Science projects also require human communication between researchers themselves, and between researchers and technologists, surmounting geographic, linguistic and cultural barriers.

Researchers have been told they need to think about their work in a wider context: where it fits in the research landscape; who it aims to benefit; what (at the most fundamental level) it is trying to achieve? Here, the key word is dissemination: quite simply, the sharing of progress with others.

Dissemination of progress and results is not simply a means to celebrate successes. Among the research community, it is a chance to inform colleagues of what you're doing – to foster collaboration and minimise overlap of work – and, of course, to share what has been learned in order to build on each other's efforts. Dissemination is also an opportunity to communicate to those outside of research: governments, industry, and the wider public.

Those paying for e-infrastructures and the scientific projects they underpin – the taxpayers of Europe – not only deserve to know how their money is being spent, but increasingly want to know what stake they have in the research. Hence, dissemination is becoming ever more about communication, where a dialogue opens up between researchers and the wider public (or, very frequently, a number of specific publics).

This Dissemination Guide will help you to identify who your audience is, to target communications towards them, and to ensure that your message reaches them at the right time to have a positive impact. In places we'll describe real-world examples of strategies that we've tried over the three years of e-ScienceTalk. Hopefully you'll be inspired to try your own ideas after reading this document. We'd encourage you to share what works for you with other projects too.

— e-ScienceTalk, July 2013

Contents

1 Developing Impact

Forming your message

Are you providing the right communication means and products to the right people through the right channel at the right moment?

If the answer is yes to all of these questions, it is quite likely that you are having an impact in terms of communication.

(Source: DG Communication, European Commission)

"Whenever you sit down to write there is only one person in your life.

This is someone you'll never meet, called a reader."
— Tim Radford, Science Journalist, *The Guardian*

Understanding who your audience is is paramount. What are are the key common traits of your desired audience? Are they policy makers? Science enthusiasts? High school students? Though your target audience is likely to be diverse, there will be a stereotypical persona in that audience that will embody many commonalities shared by all others. Think of her as Ms. Average. It is important to keep her in mind, because the tone of your message – the language used, brevity or length, the level of detail – should all be tailored to her.

At the same time, your message should reflect your own individuality as a project. Be consistent with colours, logo placement, jingles – depending on your chosen medium. Over time, consistency, and slow, measured development of your individuality, will grow into that most celebrated aspect of project identity: *a brand*.

Word of mouth: from grass roots to big ripples

It may seem obvious, but actually speaking to people, both within and outside the technical and scientific communities, can help to build awareness of your project. Attending conferences and meeting researchers from a variety of backgrounds can extract value out of your outputs in ways you hadn't imagined.

Presenting a poster or paper at a meeting, and simply getting your message out there during discussion, is at the heart of grass roots dissemination. Booking space for a booth at a conference is another excellent way of increasing knowledge of your work, and is an excellent opportunity to distribute materials and merchandise, in addition to running demos.

There's also something to be said for surveying the research dissemination landscape, identifying areas for collaboration on communications initiatives, and communicating remotely to coordinate them. Not only should you keep others updated with your own developments, but also find out what they're doing, and support their dissemination activities where possible. This can be something as simple as reposting each other's social media output, or forming comments and conversations on social media platforms, to increase crosstalk and improve your project's visibility.

Merchandise and Printed Materials

Branded 'freebies' – from pens to notepads, bags, t-shirts, hats, badges, window stickers and more – are a relatively inexpensive way of promoting your project. People are always happy to receive things for free, especially if they're useful, and the payoff is that your brand ends up being more noticed. It's important to consider your audience: are they technical, creative, from the enterprise market, or from academia? Technical communities may get much more out of a memory stick, whereas a creative community may appreciate a diary with cutting edge typographical and graphic design. Branded goods can have very low cost for a high volume of product, but be aware that the quality of your product may impact on the perceived quality of your brand. 250 pens that look nice, feel good to hold and work well are better than 1000 pens that look cheap and don't work.

Printed materials that describe your project – what it is doing, what it hopes to achieve, and its results so far – can be distributed at conferences and meetings, in the institutes that are hosts for your project, or mailed out directly. You could also ask conference organisers if your materials can be included in delegate packs or on the registration desk. From leaflets to full reports, print has the benefit that people can slip your materials into their bags and read them later. For this reason, aside from distributing materials at the start of a conference, a great time to distribute materials is towards the end of a meeting. Delegates may be looking for examples to show their colleagues when they return to their offices, or simply something to read on a train or (especially) a plane.

The social web

Many organisations, including temporary organisations such as projects, slightly miss the point when it comes to using social media, using platforms as a way to simply push their own content to followers. The problem with this approach is that it often doesn't attract new followers in large number; it's essentially preaching to the converted. You may have a group of followers on a given platform that extends slightly beyond your own community, but there's a high chance that not all of those followers will read your content (and that's *if you have content* to push, of which more later). The key to social media is that it's social – and in most social situations in 'the real world', simply promoting your own ideas will win you few friends. You have to be prepared to discuss other people's ideas, make comments, and use humour: "If you're having fun, your audience will be too!"

Different platforms encourage different styles of communication. Sometimes this may be tied to the platform's image – is it intended to be used for business networking, or for catching up with friends? There may be technical constraints inherent to the platform – such as limits on the length of a post that force a particular writing style. But limitations, in turn, can provide inspiration for creativity – whether that's a hashtag, or simplified or specialised use of language such as abbreviations or emoticons.

Having a presence on each of the social platforms is a good idea – you may have different messages for your followers depending on the platform. You might want to explore some of the research-oriented networks, as these often allow the formation of groups or projects, which could help you link up with partner projects.

With so many different social media platforms around, you may worry about finding enough time to update each of them.

Thankfully, there are some very clever online tools that can help. If-this-then-that (ifttt.com) and Zapier (Zapier.com) allow you to select an input, such as a post you've made to your online photo library, and have it reposted elsewhere, such as an automatic post to a microblogging site. Both are easy to use and can save lots of time. Yet other tools allow you to schedule future posts, so that you can set up your social media output for the week, and leave it to run.

Multimedia

The ubiquity of technology means that most of us are familiar with communications arriving through a variety of media: text, interactive graphics, audio and video. All of this combines, of course, on the web. You may find that web-based communications channels work better than many other methods of capturing the attention of a broad range of audiences for relatively little financial outlay, especially when compared to print, for example.

Mastery of web development to create sites that include interactive multimedia elements used to require reasonable understanding of how to hand-code in a variety of markup, scripting and database languages, while early GUI-based web editors often produced suboptimally encoded pages that were slower to load. This is no longer the case. There are a number of very 'off-the-peg' open source content management systems that allow you to quickly add content to your site while also facilitating the creation of templates, or a selection of pre-made ones from wide range. These range from blogging-based platforms that have grown beyond just blogs (e.g. Wordpress) to modular systems that allow the addition of video viewers, interactive elements, and excellent integration with social media and other web based services (Drupal, Wordpress).

Of course, you need to have the content to feature on the site in the first place, more of which in the chapter on *Multimedia Messages*.

Drip, Drip: The Power of Persistence

Find a way to increase the number of seconds each and every member of your intended audience is exposed to your output in a given period: Nothing builds a brand more. Updates, through social media and RSS-enabled blogs hook your audience in. Make sure you have something new to say each time though – in quieter periods, you might want to concentrate more on increasing crosstalk by simply engaging others in your field through social media. If you have a lot of content, leave some time before updating your blog with those second and third posts. If you're using social media to push your content, try to do it all times through the day – and even the night, if you're intending to build a global audience (it's always the middle of the day somewhere).

Finally, try tying in your output to other things that are happening in the world. If a current big news story reminds you of a blog post or video you made last month or last year, join the discussion, and then slip in the link. It might seem like shameless self-promotion if you're being humble, but consider the fact that you're actually contributing to the debate, and people may even thank you for it!

2 Writing

"As simple as possible, but no simpler"

These words, uttered by no less eminent a thinker than Albert Einstein, are an extremely important reminder that communicating technical subject matter to a range of audiences is a tricky business. They remind us that telling the story of science, or of any technical research, is in fact a delicate balancing act: between honesty about the true nature of experimental enquiry, and narrative flow; between technical accuracy, and understandability.

Science[1] is an exploratory activity that, though made up of procedures and methodologies, is not a defined process. Science does not proceed along preordained steps: indeed, philosophers of science (after Feyerabend) have argued that there is no scientific method – at least, not in the usual sense of the word, 'method'. In their diverse cultures, the myriad disciplines of science are more or less collaborative, more or less focused on real-world problems, more or less concerned with making new things, or understanding what's already there. They share a commonality in that, in all these fields, advancements are built on previous work, by adding to it, or overturning it. But everything else in research is pretty much 'anything goes'.

Good science writing, whether in the form of a book, a blog or a press release, should not shy away from the scientific process itself, although depending on the available space, the narrative may need simplifying here. A large proportion of the public are interested in science and technology and, even though not all work in science, many have studied science or technical subjects at university level. The more enlightened side of the press now report science as a normal activity – an extremely powerful activity, that reveals more about the world each day – but this is nevertheless a huge leap forward from the days when all scientists were seen as 'boffins in white coats'.

Despite this progress, some of the most popular press still views science as an endeavour wholly disconnected from the rest of society. The only way to counter this is by improving the way science is communicated, which is, of course, precisely what this report is about. Communication or dissemination is now recognised as a

[1] Here 'science' can be read simply as research, although humanities subjects in the context of e-infrastructures are either 'social science' or just 'science'.

career in itself, but how or even whether the public should be included in scientific debate has not always been universally agreed upon (see Writing for Reputation, at the end of this chapter).

Writing about Science

Much of the information here has been gleaned from other sources on the web, specifically from the Guide for Entrants to the UK Medical Research Council's *Max Perutz Science Writing Prize*, and *Guardian* writer Tim Radford's *25 Commandments for [Science] Journalists*. Some of it, however, has been picked up over the years from personal experience, so the tips given here have been seen to work 'out in the wild'.

It is likely that that writing will form a major part of your communications. So how to go about it? Dissemination may be an obligation – a deliverable, perhaps, for your project. But think of it as an opportunity to get your message out there, where your message can have long-lasting impact.

On the subject of longevity, the written word lasts a long time. The *Despilio Tablets* of ancient Greece, found near Lake Kastoria, are thought to be some of the earliest examples of writing – at 7300 years old. But as much of your written output will reach its intended audience through the web, your output doesn't have to be written in stone – it isn't unchangeable. Depending on the nature of the change you make, you may wish to include an explanatory note (if someone was misquoted, for example). For something like a typo, it probably isn't necessary.

When you sit down to write, there is only one person in your life…the reader. You may be obliged to write something (it may be your job), but no-one is ever obliged to read it (except, of course, project reviewers. But you probably want them to enjoy your reports!).

Think about your audience: who are they? This is the most crucial thing to consider. If a writer misjudges their audience, even the most self-aware could end up using an analogy that fails to translate, perhaps for linguistic reasons if an international audience is sought, or even because it requires a key piece of knowledge from a subject of interest to the writer (but few others). Indeed, one of the most common mistakes is to overestimate what people know while simultaneously underestimating their potential to understand. After multiple revisions and edits of an article, explanations rendered superfluous by better writing earlier on are often the last to be expunged – watch out for them. Repetition is another pernicious feature of an article that has undergone many rewritings: it breeds in the dark. Always the best thing is to have a colleague read something through – all writers, except the most eagle-eyed, will read what they think their article says, not what it actually says.

Structure

Like all good things, your article needs structure – in simple terms, a beginning, a middle, and an end. The opening paragraph needs to reel in your audience, and so to continue with the fishing metaphor, it needs a hook. You may wish to start with a quirky fact, something that might capture the attention of the reader. Or you might employ a fictional narrative that sets the scene. Or you might want to begin with a question. Whatever you do, make sure it's something relevant to the audience – either something that interests them, a question that doesn't bore or patronise them, or a fictional narrative that doesn't exclude a large proportion of the population. Quotes are also popular. But whatever method you use, make sure that you don't spend half your article's word count starting it.

Decide what your angle is before you start writing – sometimes this is hard if the writing contains two opposing threads, but make sure you don't end up with an article where even you don't know where it's going. Pepper quotes, from as many perspectives as possible, throughout the article. Nothing captures interest more than another's opinion. Quotes can form anchor points for the bulk of the article – the middle bit. Be mindful of economy of words, but be sure to include enough information for the reader to understand what has been done, by whom, and how it improves on what has been done before.

The end of your article requires as much though as the beginning, so you should spend as long on your last sentence/paragraph as your first. Have an end: don't just stop abruptly. The goal is to leave the reader feeling satisfied, so you may wish to reflect upon the ideas presented in the article. On the other hand, you could use the end to introduce a 'kicker' – a twist in the story, so that the reader understands that the story isn't just one sided. They may want to seek out more of you writing as a result.

Pitfalls

The most common pitfalls of science writing are the most common of all writing. If you find that you have to say something is interesting, as in the sentence-opening, "Interestingly…", then what follows is almost guaranteed to be uninteresting. Mixed metaphors are hard enough if your reader has the same first language as you, and incomprehensible if they don't. Obscure references or analogies with limited scope, clichés, puns and other poor taste phraseologies should all be avoided. And although we are all social beings with consciences and passions, the best writers avoid editorialising too much.

On the other hand, to paraphrase Miles Davis, feel free to tear up the rule book once you've learnt it.

Writing for the Web

Likely to form the bulk of your outputs, web writing does require you to modulate your writing style slightly. Shorter sentences. Short paragraphs. Readers skim: RSS feeds, social media links. They may give your article a single minute, so it's important to grab their attention, present the facts, and conclude in as few words as possible. Aiming for 'punch' means writing with economy, panache and impact, and here the hook has to be as strong as possible. Links and images help to add substance to an article that has otherwise to rely on the minimum amount of text. The words you use need to be chosen carefully, as they will impact on where your article appears in web searches, for instance.

Press Releases

Before the advent of the web, unless scientists themselves were particularly media-savvy, the press release was the sole means by which a story with potential for impact could be unleashed upon the world. Even today, press releases are an efficient way of pushing your story out to mainstream media. Here's a checklist that you might want to consider:

- Summarise the main point in the first paragraph
- Headline should follow from this (could write it last...media may change it anyway)
- Include quotes from spokesperson
- Describe the advance/development in simple but accurate terms
- Add images, will be more likely to run the story
- Be available for call back, don't issue the press release when the key spokesman is going to be unavailable.
- Don't add your own strong spin, the journalist will do that. Tell it fairly straight, but relevant and with context.
- You'd be amazed how often a press release will be used as it is eg Helix Nebula. Journalists are pressed for time .
- The case for press releases – mass communication to journalists, within your control, chance to establish clarity.

Pitching a story

If you're feeling confident in your writing abilities, why not pitch a story? Specialist technical, academic or education-focused magazines and journals are often seeking content for their publications, and its an excellent opportunity to get more exposure for your project.

- Research the publication you're pitching for
- Make it clear you understand the audience
- 150 word bio
- 2/3 Example articles
- Introductory paragraph draft
- (rest of article as bullets)

Things to be aware of in the media

Notwithstanding political allegiances and general tone, many mainstream newspapers often seek 'balance' in their stories and, in a world where even science journalists are not always scientists by training themselves, this can even apply for science stories. However, we know that the scienctific method is more likely than other areas of human endeavour to invoke an overall consensus, because conclusions are based on evidence and that evidence exists in a framework supported by more evidence. That is why, when it comes to global warming, for example, the vast majority of scientists believe that carbon dioxide from human industry is creating a greenhouse effect that is leading and will continue to lead to global warming. But if you read some newspapers, you might believe that there is a debate in the scientific community and that the debate is more or less 50/50 – in other words, those that believe the world is warming dangerously and that humans are to blame are roughly matched in number by those who believe that warming isn't occurring or that it isn't caused by humans.

In some cases, the motive for providing balance may for underhand political or economic reasons, rather than representing fairness.

Writing for kudos, or for a wider audience?

In the 19th Century, Michael Faraday had a motto: work, finish, publish. In many ways, he was very much the archetype of the modern research scientist, working on experiments and then publicly recording his findings by publishing them in journals – most often, the *Philosophical Transactions of the Royal Society*. At the same time, he was also an extremely accomplished public lecturer who cared about sharing his knowledge with the wider world.

Hundreds of years before Faraday, before even early English 'natural philosopher', Sir Francis Bacon's dream of Saloman's House, the question of making technical knowledge understandable to those uninitiated in the language of learning, Latin, was answered by an individual who was part wandering mystic, part physician, and something of a proto-empiricist. Paracelsus was a swiss doctor who travelled from town to town in central Europe. In his teachings, he challenged centuries-old dogma that diseases were caused by an imbalance of internal bodily humours, and

asserted that diseases were instead caused by external agents. Perhaps more importantly he taught his findings in the vernacular tongue, not in Latin. He believed it was important that as many people as possible could understand his work. In fact, he held the importance of dissemination higher than that of academic reputation.

In England, Saloman's house – Francis Bacon's vision that would become the model for the pure research institute – was an antidote to the rote learning of Aristotle's systems of logic that were taught in the two universities, Oxford and Cambridge. Bacon thought this system should be replaced with one based on empiricism – observation and experiment – just as Paracelsus did. Around the same time, Thomas Gresham, a merchant in London, had an idea for a technical college for tradespeople, to learn mathematics and geometry. On his death he left money for a College, Gresham College, which would become the first meeting place for the Royal Society, which was chartered in 1660. In 1665, the Society published what would become the archetypal scientific journal, the Philosophical Transactions of the Royal Society.

The research scientist for much of the century after Faraday – the 20th – was concerned mainly about one thing: citations, the tool by which scientists establish reputation, based on scientific priority and peer review. This was usually in prestigious journals where their work would be noticed, especially by specialists in their field. Unlike the earliest issues of the Philosophical Transactions, which were written in language understandable to the non-scientist, the specialist terminologies and writing style used by scientists became increasingly impenetrable to those without scientific training and even those unversed in the specific language of increasingly narrow fields. Scientists increasingly prioritised citations to the expense of communicating their work to a wider public.

Unfortunately, when there is a lack of good dissemination practice, especially from the sciences, the void that remain is often very quickly filled by tabloid sensationalism. And this is what began to happen. It became clear that by ignoring the gulf between public scientific literacy and that of scientists themselves, science itself could come under attack. Not everyone can study science, but scientists can help to promote scientific literacy, simply by making their research known and understandable.

The insularity of some early 20th century science a disservice to the public – often those paying for the work – but also to scientists from other fields. This presents a problem, because most often, innovation arises from cross-disciplinary collaboration.

Recognising this, the EC from the 1980s on has funded scientific projects that consider carefully the importance of communicating research and findings to a broader audience – whether that's the more crosstalk within technical community, or communicating with a wider public. And that communication, almost as a default, returns to good, clear writing.

3 Multimedia Messages

The falling cost of high quality video and audio recording equipment, and improved software packages for the beginner to intermediate user to edit those recordings, means that even for modest budgets, multimedia dissemination is no more difficult than writing a good press release. Video and audio recordings are potentially high impact – drawing large audiences that, it must be said, may never have read your blog post or press release, but would happily watch a video while travelling, or listen to a podcast while in the gym.

Audio podcasts

You could think of audio as a 'way in to' multimedia dissemination. First of all, you're only audible, not visible, which can help to reduce nerves if you're inexperienced with this kind of technology. Like writing, you have to have an idea of what you want to say, but beware of heavy scripting and over-rehearsing, as both kind sound staged. Having an idea of what to say, and just doing another take if necessary, results in a much more naturalistic endpoint.

For both audio and video work, it really is 'all in the edit'. Both open source and commercial software is available whatever your operating system. Think of editing as just making a collage in time, rather than on a piece of paper. Starting with audio makes it easier, but you should also try to study other science podcasts to inform how you splice things together. Sometimes, adding a few seconds of silence in between sections, or a subtle soundtrack from a royalty-free site, can add pacing and structure to finished piece.

Technical Considerations

Audio might be easier than video, but it still needs some work. Experiment with different microphones. You don't necessarily need a separate audio capture device – a good microphone attached to a laptop may work well enough. You could always start with a fairly simple, low overhead system and decide to upgrade if you think audio is the best way to go for you. You'll need headphones to monitor the sound quality, and be prepared to position and re-position your microphone to get the best results. If you're using a standalone unit, make sure you have enough power – take an adapter and extra batteries, if appropriate.

Forming Your Message

What is your message?

Because audio is the only medium by which you will connect with your audience, you'll need to speak visually – descriptions, analogies, and evocative phrases can all contribute to a good podcast. In terms of structuring the podcast, the 5 C's can help:

- CLEAR: 2–3 message points. Focused around a theme
- CONNECT: Who is the audience? What is the "ooh!" factor?
- COMPELLING: Make it interesting
- CONCISE: Soundbites
- CONTINUAL: Repeat the message to create impact

If you're creating your own podcast, you have full control over the edit and final output. But there's no reason why you couldn't follow these principles if you were being interviewed by a radio broadcaster, for instance. Under such circumstances, it's likely that the broadcaster has already identified something newsworthy in your story, but it doesn't hurt to remind your self of its newsworthiness. You might even test the message on a colleague from a different or non-technical background.

- Remember the news angles
- Make your interview newsworthy
- Every news story needs an 'angle'
- Something that makes audiences care

In addition, keep your answers short. Generally, only one or two sound bites will be used. Speak clearly and at a moderate pace, with emphasis on delivery: think about voice, inflection and pace. If you're being interviewed over the phone, stand up – you'll find that this improves the quality of your voice.

When questioned by the interviewer, be expressive and animated, but not defensive. Also, don't worry about repeating key phrases – this will help cement a concept in the listener's mind.

Remember:

- Words are the tools we use to shape perception
- We want the audience to understand everything we say, because we don't have much time to say it
- Short sentences; avoid jargon; use consumer-friendly terms and no acronyms

Video

"If it can be thought, it can be filmed."
— Stanley Kubrick

Capturing a story with video, inserting cutaways, and producing a compelling and well-paced edit becomes an easier proposition once you understand these concepts in the context of audio podcasts.

Video introduces elements that need to be considered carefully: composition of shot, and lighting. When composing an image, make sure that the person(s) on-screen are well-framed, that the background is not distracting, and that the image is well lit in the viewfinder/monitor screen. Just as for audio podcasts, make sure that you can hear the people speaking. If it's a noisy place where you're filming (such as a conference), at the very least you should invest in some good quality bluetooth or radio microphones.

Behind the Camera

- Set up the shot to focus on those being interviewed
- Keep the camera still – an inexpensive tripod is all you need
- Put the interviewee at ease (they may be your colleague)
- Remind them that they can re-do a take
- Remind them that they have time to respond
- Always ask them to introduce themselves
- Best if camera operator and interviewer are different individuals
- Camera operator can make sure take is good

Tips for Interviewees (and Presenters)

- Wear dark/medium coloured clothes – avoid fine patterns
  - ➡ Provides shape, conveys confidence and credibility
- Wear something a microphone can be clipped to
- Lean slightly forward toward the camera
  - ➡ Gives you more presence and intimacy
- Don't Look directly into the camera unless asked to
- Retain eye contact with the interviewer
- If possible, choose a backdrop appropriate to the topic
- Relax (and smile when appropriate)
- Breathe deeply and slowly for a few moments
- Avoid milk and caffeine beforehand – instead, drink water

Review, evaluate, improve

- What worked well? What could be improved?
- Prepare, practice, then practice again

Editing (audio/video)

- Edits can be a good way of tidying up the message
- Cut away shots, especially illustrative photographs, charts
- Make sure that the the interviewee is happy with the final edit
  (If that means you, then make sure that the interviewer sends you what they intend to use)

Working With the Media

Working with mainstream media requires getting into their mindset and understanding something of how they operate. If you do have a story that's about to go big and you expect television cameras, for instance, remain calm, think about your message, and just treat it like a video podcast with (probably) bigger cameras. Your ultimate goal is to communicate a message that persuades skeptics, engages the uninterested or neutralises the opposition.

- Tailor the message to the particular audience
- Keep it simple: use uncomplicated but interesting language
- Journalists can only report on what you say
- The journalist will be looking for a good news angle (Make sure their angle is one that you're happy with – something that helps *your* goals

In the 1960s, the average length of a TV or radio quote (sound bite) was around 60 seconds. The average length now is just seven seconds.

A news story usually contains two or three basic ideas, so make sure you keep in mind the three most important messages from your story. Try to distil each into some kind of soundbite not exceeding 20 seconds in length.

What are the thoughts you most want the audience to remember?

- Think headlines followed by the "story" (evidence)
- Both hard evidence (facts and statistics) or soft evidence (anecdotes and personal stories)
- Quotes and sound-bites are most likely to survive the editing process
- Use strong lively language
- Prepare and memorise them

Other tips to keep in mind

- Use body language to make your point visually *i.e.* pointing, sign posting
- Allow space / pauses for editing
- Don't refer backwards and forwards to what you may have said earlier, as it makes editing harder.
- Say when there will be more news, what the actions are, then stick to that timetable, even if you don't have more to say.
- Ask if the interview will be live or recorded – chose live if you have the choice because then you can't be edited out of context
- Dialogue with the journalist – ask for the questions or the topic that will be covered in advance. They may offer you fact checking, but not approval.
- Journalist will not generally treat a scientist in the same way as a politician – they expect to have be aggressive with a politician to get the story. Scientists are seen as more trustworthy and open.
- Analogies – a useful tool to help relate complex subjects to your audience. But don't stretch the analogy or metaphor too far.
- Law of diminishing returns – the interview loses freshness over time, don't over rehearse.
- Film to about the correct length if you can, editing a long interview down will take ages. About 4–5 minutes is the maximum for YouTube, 2.5 is better. Split up long interviews.

Dealing with negativity

- Some journalists may arrive with a negative news angle already planned, especially if you have had bad press
- Try to predict negative angles
- Have a well-formed defence
- Substitute your own angle
- If you suspect them of having 'an ulterior motive', remember that science teaches you critical, analytical thinking…
- Could you show them that they are 'not even wrong'?

Blocking and Bridging

- "Blocking and bridging" is a technique to help an interviewee stay on message
  - "Block" by acknowledging and briefly answering the question
  - "Bridge" to the key message you want to deliver
- Don't ignore or evade the question – they'll just repeat it
- If asked about a problem, talk about a solution
- Some key phrases can help —
  - " Another thing to remember…"
  - "That's not my area of expertise, but what I can tell you is…"
  - "Another way of thinking about this is…"
  - "That's an interesting question, and to put it in perspective…"
  - "I'm glad you've asked me this because it brings me to a point that I've been wanting to make.."
  - "I don't have precise details, but what I do know is..."

Dealing with a crisis situation

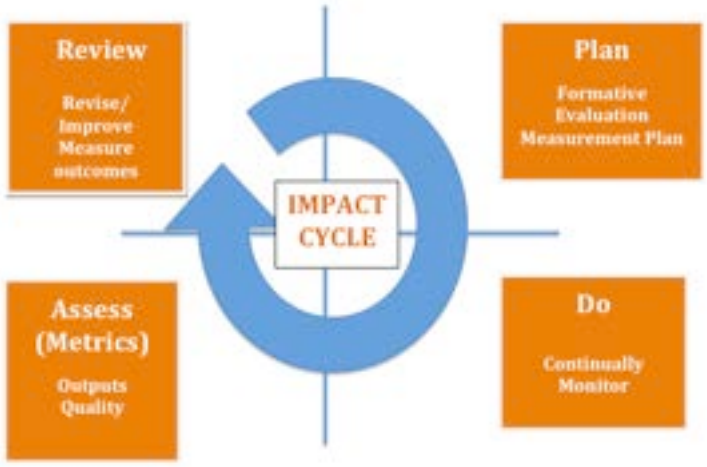
- Some questions can't be given a straight answer
- But to avoid the question looks bad too
- Acknowledge the problem quickly and openly
- Focus on practical action
- Honesty and pragmatism are powerful positive signals, even in a negative situation.
- In a crisis, express sympathy / understanding early on – but don't take the blame, unless it is your fault.
- "Tell the truth, tell it fast, tell it all"

4 Measuring Impact

Why measure the impact of your communications? Isn't getting your message out there enough?

In order to assess whether the strategies you've formulated are working well or need tweaking, it's important to evaluate impact using both quantitative (such as metrics) and qualitative measures.

A four-stage impact cycle: Plan > Do > Assess > Review [...> Plan > Do...] highlights the importance of continual evaluation and adjustment to your strategies:



Different stakeholders in your project can benefit from the continual improvement of your communication strategies:

Funders:
maximise impact of activities and investments
identify drivers of success
feedback into sustainability plan
attract more funding

Internally, you can:
assess achievement of project aims
monitor quality of existing outputs

Your users, meanwhile, can:
discover any intended/unexpected benefits

provide feedback/impact indicators for our partners
improve the products
assess tools and provide recommendations

Why metrics alone aren't enough

Communication output reveals nothing about the quality, reach, impact or utility of your communication activities. You should follow up with your audience to see how your materials are being used – perhaps they've been cited, or provided some inspiration for an activity. Impact – how the target public demands and receives your output – also describes qualitative aspects of your materials. You should examine how much of the information is retained:

- Has it improved awareness/knowledge of your project among your audience?
- Has it changed attitude or perception?
- Has it changed your audience's behaviour?

Defining Impact

Impact = Reach x Significance

Reach is a quantitative measure, whereas *significance* is qualitative.
Your assessment toolkit includes means of assessing both.

Quantitative (Reach)

- Deliverables/Milestones
- Online surveys
- Social engagement
- Webometrics

Qualitative (Significance)

- Interviews (e-interviews/face to face)
- Focus groups
- Feedback from unsolicited emails
- Solicited emails
- Online surveys
- Thank you letters/compliments
- Ethnographic-observations
- Usability testing

You need to use the *right tool* to assess whether you are *achieving your goals.*

Focus Groups

Focus groups are a successful qualitative research method, encouraging frank debate and often producing an honest and reliable critique of your project. They can provide a useful assessment of the current state of your project at every stage.

At the start (formative):

- Help define the expectations and aims of the project
- Consider the potential impact of the project on individual stakeholders
- Define user requirements ('needs analysis')

During your project:

- Evaluate the project and the success of processes used
- Interim feedback on the project

After (summative):

- Evaluate what worked well and what didn't work
- Consider how the project could have been improved

Planning a Focus Group:

When planning a focus group, there are some important points to consider:

- How long should it be? Ideally, 1–2 hours is best
- How many people should you invite? Ideally 3–12 people
- Give the group a focused activity
- Observe the group – moderate by providing direction if needed
- Provide incentives, e.g. support for travel and subsistence
- The location – aim for 'private', comfortable, relaxed

Sampling and recruitment

Choosing your participants carefully is crucial

- You could appoint people directly, or allow them to 'sign up'
- The dynamic with small groups is different to big groups
- Consider over-recruiting, in case some don't show up
- Pre-existing groups can work well – lead to more open discussions
  - ➡ User communities, stakeholders, scientists
- Make sure your have informed consent from participants
  - ➡ Consider ethics, data protection

Desirable Qualities for a Moderator:

- Detached, but approachable
- Flexibility in pacing the activities
- Remains alert to cues the group is disintegrating – knows when to intervene – but also leaves the room to allow space for ideas
- Good motivator
- Encourages respondents to be more specific about generalised comments
- Encourages unresponsive respondents to participate

Data Collection and Analysis:

Try to consider what equipment you'll need and how you will go about recording what happens

- Equipment: Tables, circle, pens, recording equipment x 2
- Try to record all information including facial and body expressions
- Write up your initial thoughts immediately after the focus group
  - ➡ permanent record/audit trial
- small data sets
  - ➡ sentiment analysis
- open coding
  - ➡ disagreements, arguments, commonality
- large data sets
  - ➡ spreadsheets

Benefits and Limitations of Focus Groups:

Benefits:

- Group dynamic
- Snowballing
- Excitement
- Security – feel more comfortable than speaking alone
- Serendipity
- Speed/Immediacy

Limitations:

- Difficult to moderate
- Difficult to code, analyse and interpret
- Not representative
- Individual perspectives are not easy to distinguish
- Sensitive vs. controversial issues-data is not fully anonymous

Online Forms

Just as you would choose your communication method based on the requirements of your audience, you should match your assessment and feedback collection method with their habits. Online questionnaire forms are an excellent method for audiences that spend most of their time on the web – and they're especially relevant for collecting feedback on web-based communications initiatives. Again, you could incentivise – for example by offering an inexpensive 'goody bag' for a fully completed form.

When putting together your questionnaire, there are some important things to remember. It's definitely something of an art form.

- Try to begin with interesting questions
- Locate confidential questions at the end
- Be brief and concise – use lots of white space
- Ask one question at a time: avoid double-barrelled questions
- Be specific about what you want to measure

Online Tools

If you're producing content for the web, it's important to know which country a visitor is from (so you can assess global reach), how long they're looking at it, and how long they spend on your site (including other pages) in total.

So what's worth measuring?

- ➡ Make sure you measure more than deliverables
- ➡ Prove you are relevant to your community
- ➡ Measurements should emphasise your effectiveness, not your workload
- ➡ Measure a few things that relate directly to your strategic plan
- ➡ But ensure capture unexpected impacts
- ➡ Be smooth and economical – you should be able to view results easily

General tips

- Structure your project around measurable goals
- Brainstorm and refine your impact goals regularly
- Match your tools to the questions you're asking and your audience
- Face-to-face can work better
- Make sure you know what statistics you will get from each tool
- Take advantage of all opportunities to gather feedback
- Always incentivise (even if it's just providing reciprocal feedback)
- No magic formula – try several approaches to see what works

5 Epilogue

This guide should provide you with some tips on how to go about developing your communications methods. Our best advice is to try different things, to see what works for you.

In the digital arena especially, the landscape is constantly changing. We've tried not to be too specific in the platforms we mention for social media, for example, simply because technology and trends change over time.

In Chapter 1: Developing Impact, we mentioned the rise of the science and technology communications professional. There are many 'science communications' courses, from diplomas to Master's degrees, available at a number of institutes of higher learning across Europe. You may want to explore what these courses offer. Some may be more theoretical than others, and indeed the investigation of 'science in society' is becoming a popular area for PhDs. On the other hand, there's nothing to stop you taking up the challenge of communicating science to a broader audience even if you don't have a specific 'science communication' qualification – the only barrier to success being an inability to adapt to a constantly changing game.

In this sense, there's something to be learned from a practice that is becoming more popular in the software 'app' design world: the mantra, "Fail fast. Fail often". Our individual fear of failure is what often holds us back. It's much better for a project to encourage innovation and risk failure – indeed, to fail, and learn from it – than to stick with tried-and-tested methods that don't advance your practice. If it works for your audience, after all, "anything goes".