Communication Skills of Researchers

University of Belgrade
INSTITUTE FOR MEDICAL RESEARCH
National Institute of Republic of Serbia

Training School

Citizen Science as a research tool for tick and tick-borne disease risk prevention

Monika Stefanović-Stojanović
Communication Officer at IMR

Breaking the forth wall

- Until recently, communication was an **entirely overlooked** aspect of science

- In the 20th century, science began receiving **funding** from both governmental and private sources, leading to scientific accountability for grant-funded projects

- **Open Science** vs. "Closed" Science

- "In contrast to closed science systems, open science sets new standards that ensure that, through increased availability of data, tools, and processes, scientific practices are reproducible, transparent, inclusive and collaborative." (UNESCO, 2022, p. 5)

- Open **Science Communication (Sci-Comm)** is one of the pillars of open science
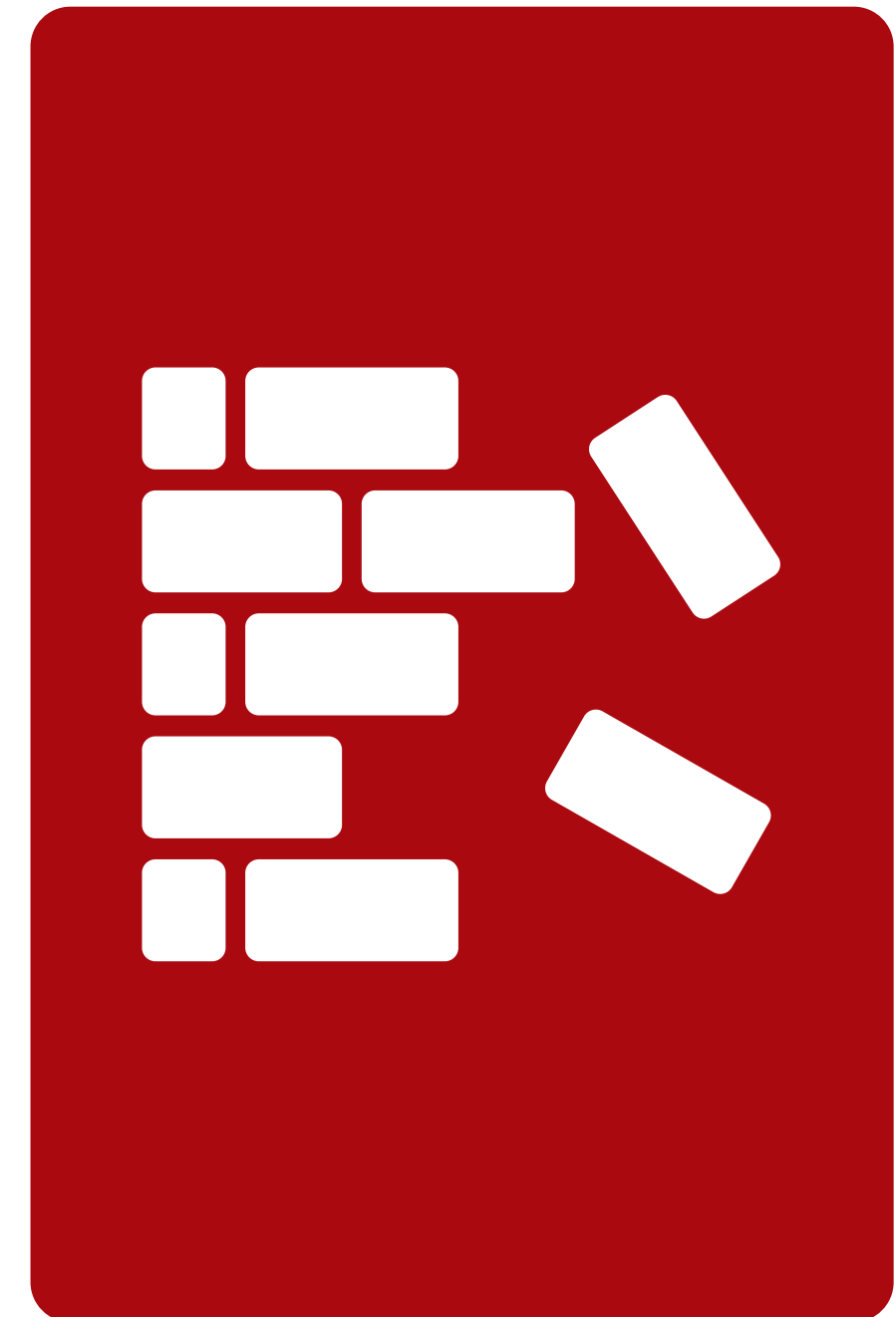
Pillars of open science
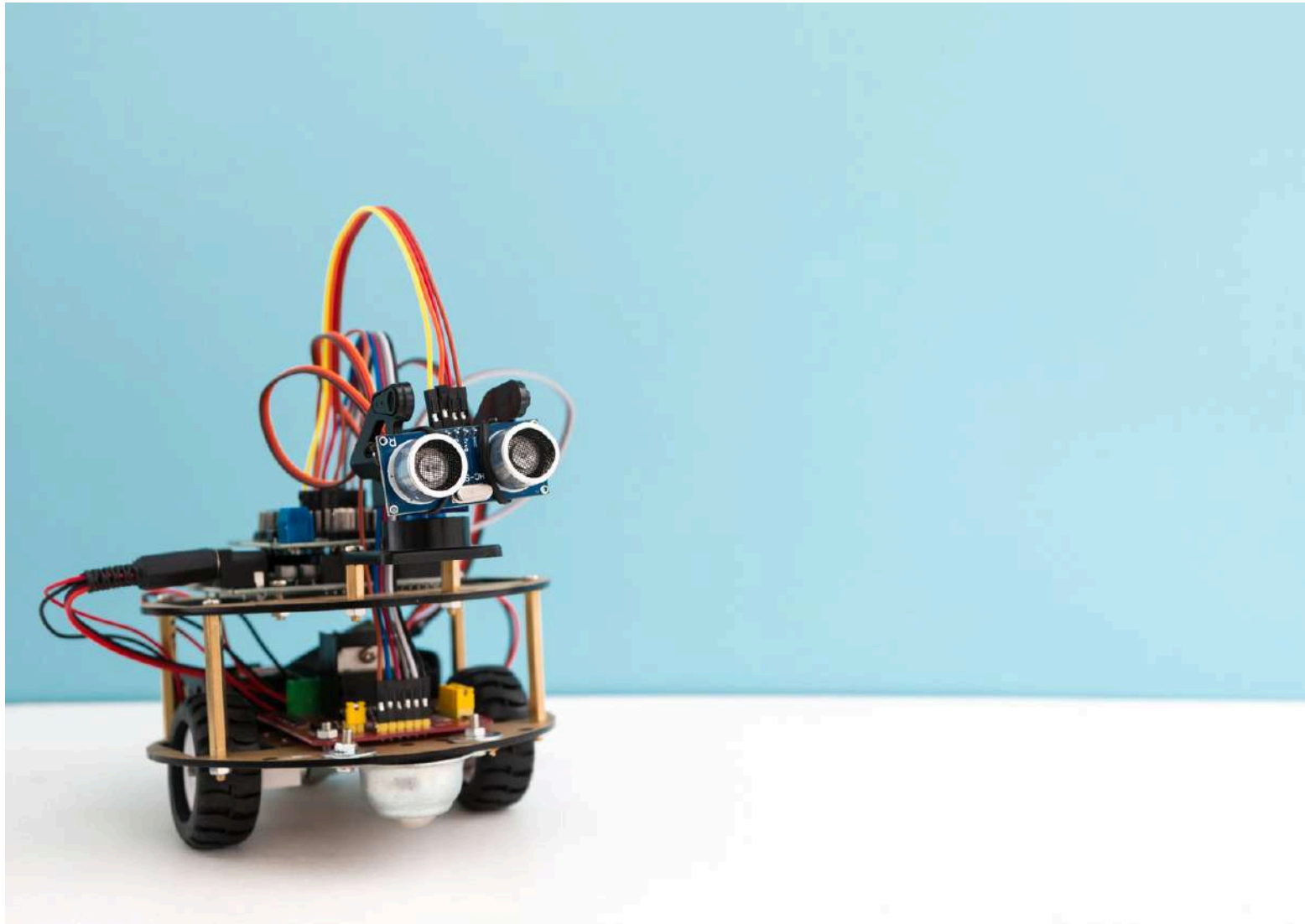
01 Open scientific knowledge

02 Open scientific infrastructure

03 Open dialogue with society

04 Open engagement of community members

Why do we need sci-comm?

- **Informing** the public and **influencing** behavior vs. outdated beliefs, conspiracy thinking, and intuition
- The most valuable tool in the post-factual era for tackling **disinformation and misinformation** about science, contributing to the **scientific literacy** of the general public
- Encouraging individuals to **engage in science** is especially vital for marginalized groups and local communities
- **Demystifying** scientific work fosters a better understanding of the researcher's needs
- Incorporating a **range of perspectives** in the quest for scientific solutions
- **Increased investment** in science for the benefit of society
- **Highly integrated research practices** with interdisciplinary and multidisciplinary collaborations
- Critically relevant in addressing **local and global challenges/hot potato topics** such as lithium extraction and climate change

What is Sci-Comm?

Science communication is the practice of **informing, educating, and increasing awareness** about evidence-based scientific information in an open and transparent interaction with **target audiences and stakeholders** using **clear and inclusive language** free of scientific jargon for the purpose of bringing multiple **benefits** to all participants in the communication process.

THE QUADRUPLE HELIX (4H) MODEL

emphasizes the necessity of close collaboration between **knowledge institutions, industry, government, and citizens** to strengthen science and optimize the processes of creating, sharing, and communicating knowledge for the **benefit of society.**

Science communication is not the same as science dissemination!

→ Scientific communication is **inseparable** from the dissemination and exploitation of research results, and it **amplifies** their impact.

→ Dissemination is a **one-way** communication of scientific results directed at specific groups of stakeholders.

→ Communication is a **participatory,** continuous, and planned activity that engages all target audiences, stakeholders, and target groups.
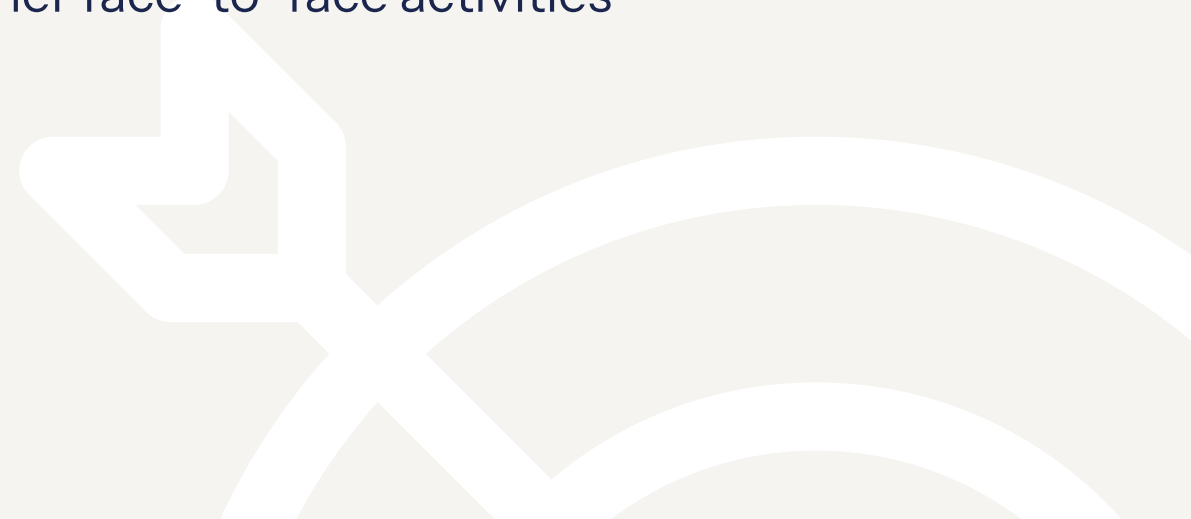
Channels for

1 Science Communication

- Website
- Promotional digital materials
- Videos
- Traditional media (articles in newspaper, TV appearances, radio guest appearance)
- Blogs
- Social media
- Visual identity
- Webinars and workshops for the general public
- Podcasts
- Digital newsletters and magazines
- Open days and other public events
- Documentaries

2 Science Dissemination

- Scientific publications, journals, books, articles
- Handbooks and guidelines
- Open data
- Scientific conferences, seminars and fairs
- Meetings with decision-makers
- Training sessions with target groups
- Project-related handbooks and guidelines
- Traditional forms of mass media
- Other face-to-face activities

Science communication occurs frequently nowadays through **social media platforms** like Facebook, Instagram, X, LinkedIn, or TikTok since large audiences can easily access them.

"**If you do not care about networks, the networks will care about you, anyway.**

For as long as you want to live in society, at this time and in this place, you will have to deal with the network society. Because we live in the Internet Galaxy."

Manuel Castells

Facebook

The most effective platform for securing new **grants**/fostering **collaboration** with the academic community and local SMEs

Instagram

Boosting the visibility of scientists by highlighting their **brand**/enhancing influence/dismantling **stereotypes**

X (formerly Twitter)

Streamlining **interactions** within the scientific community (via Lists) and contributes to higher **citation** rates for published work

LinkedIn

Professional focus/fostering **collaborations** within the scientific community through networking/thought leadership

The importance of sci-comm for researchers

- Increased **visibility** for scientists, research institutions, projects, and outcomes
- Building or improving the **reputation** of the research institution
- New **career opportunities** within and outside the institution
- Raising **financial assistance** from the government and stakeholders
- **Documenting** the value of scientific research
- Research **validation** through increased public support
- New **partnerships** to access the market
- New **collaborations** in the scientific community
- Higher **citation rates** for publications
- Seamless transition of research findings into **clinical practice**
- Maximizing the potential for collaboration with **citizen scientists** on a specific project
- Building **authority** in the field of scientific research
- A sense of **personal fulfillment**
- The **number** of scientific papers and journals has surged dramatically

1min

Over **7,000 scientific papers** are published every day.

In the field of biomedicine alone, **2 scientific articles** are deposited in the PubMed database **every minute.**
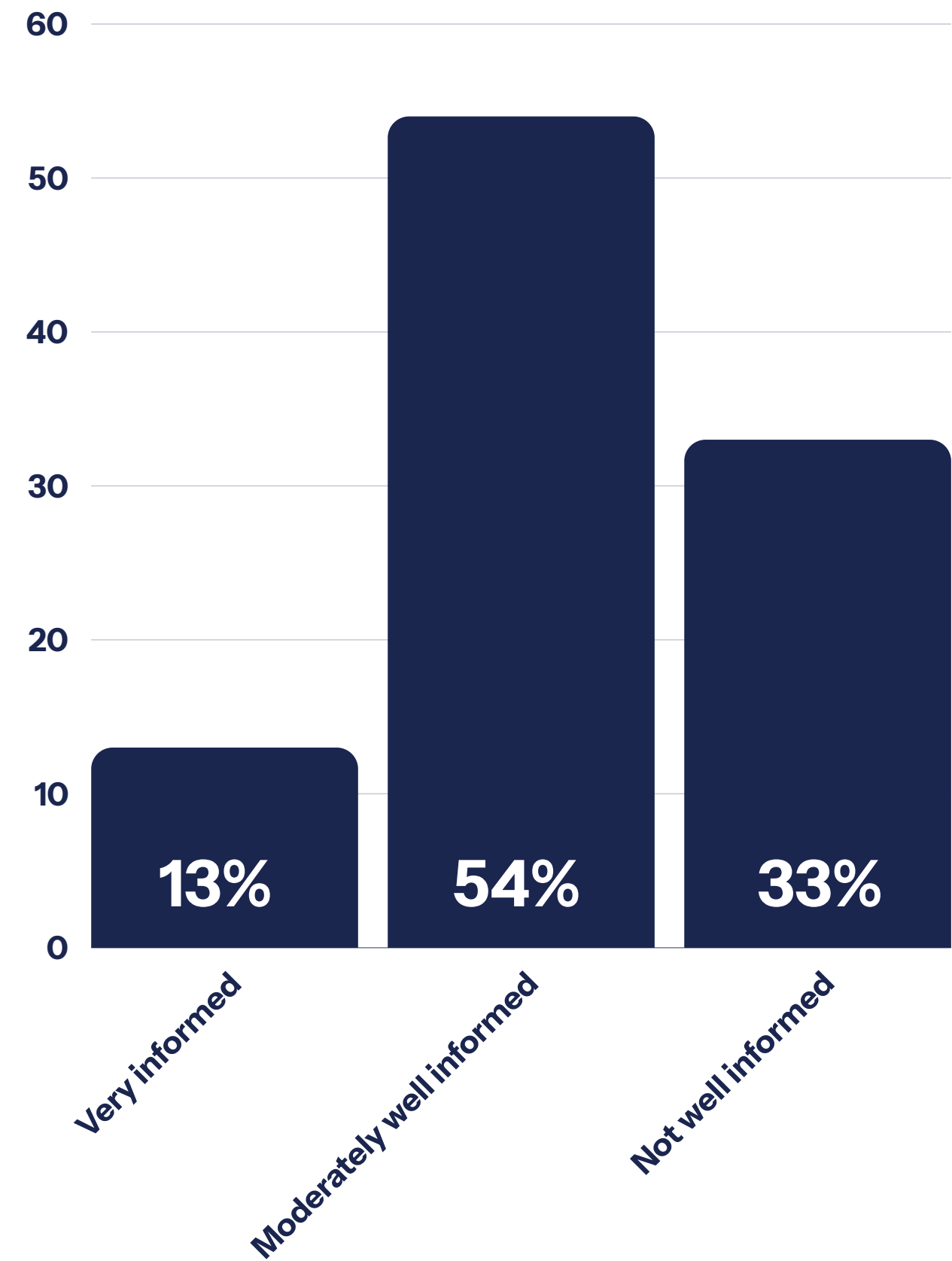
Every **scientist** should be a **communicator**, affiliating outside academia.
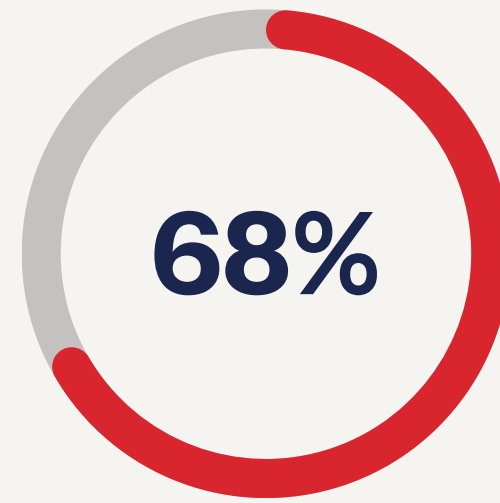
Informed about **new medical discoveries**

37,103 respondents from EU and non-EU countries

60

50

40

30

20

10

0

13% — Very informed

54% — Moderately well informed

33% — Not well informed

50%

Respondents agree that people can no longer **trust** scientists to tell the truth about controversial scientific issues because they depend more on money from industry
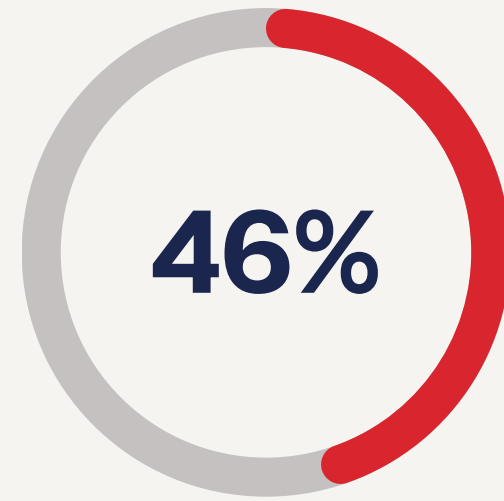
68%

Respondents tend to agree that scientists should **intervene in political debate**
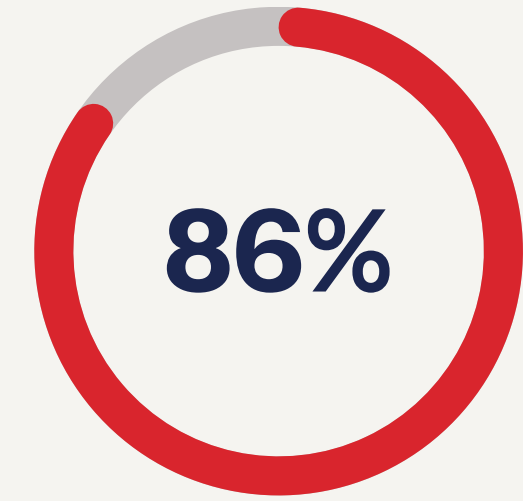
51%
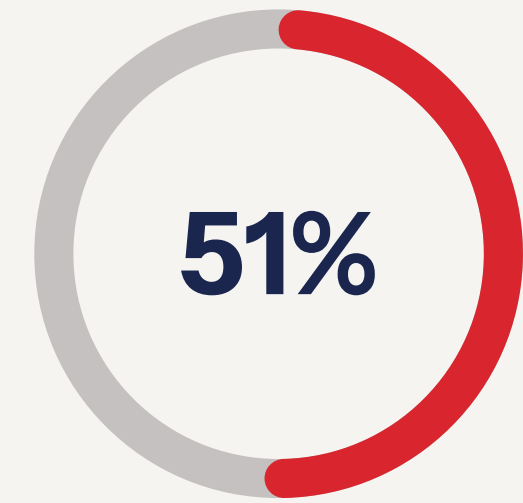
Respondents agree that scientists don't spend sufficient **time** meeting people like them to **explain their work**

54%
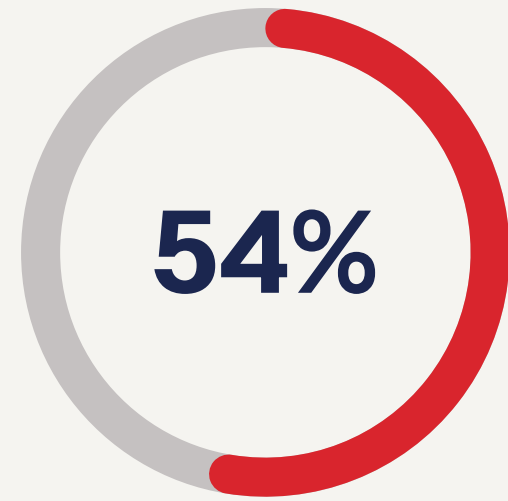
Respondents agree that they would like to **learn more** about scientific developments
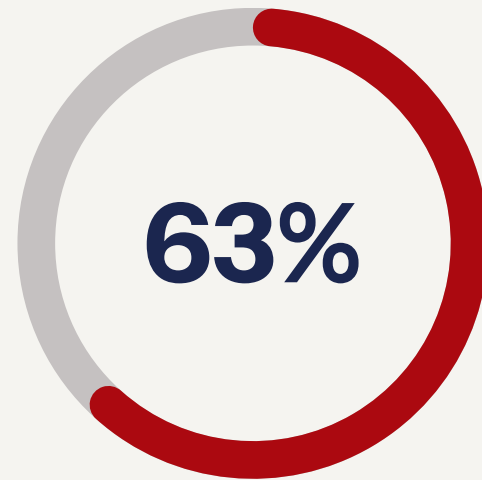
46%

Respondents agree that science is **so complicated** that they do not understand much about it

86%

Respondents think that the overall **influence** of science and technology is **positive.**

Most EU citizens **get their information** about science and technology from

63%

Television

29%
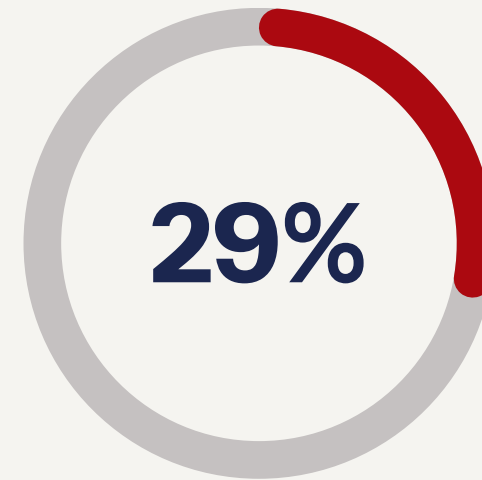
Online social networks and blogs

24%
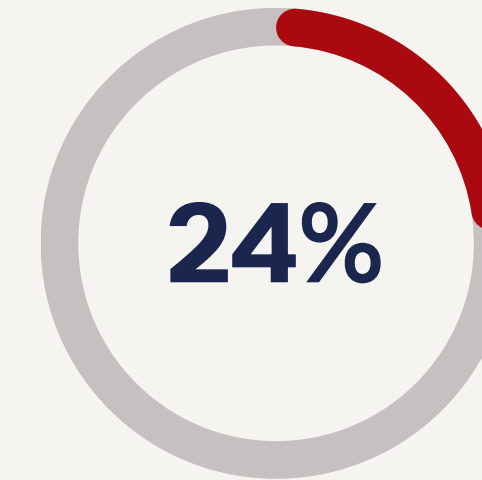
Online or in-print newspapers

59% Watching documentaries

55% Talking with family or friends

33% Visiting science and technology museums

22% Studying science and technology-related issues in their free time

Blending strong scientific expertise with practical communication skills

to create a positive feedback loop.

What are your communication goals?

- The **first step** in conveying a scientific message

- **Short-term objective vs. Long-term goal**

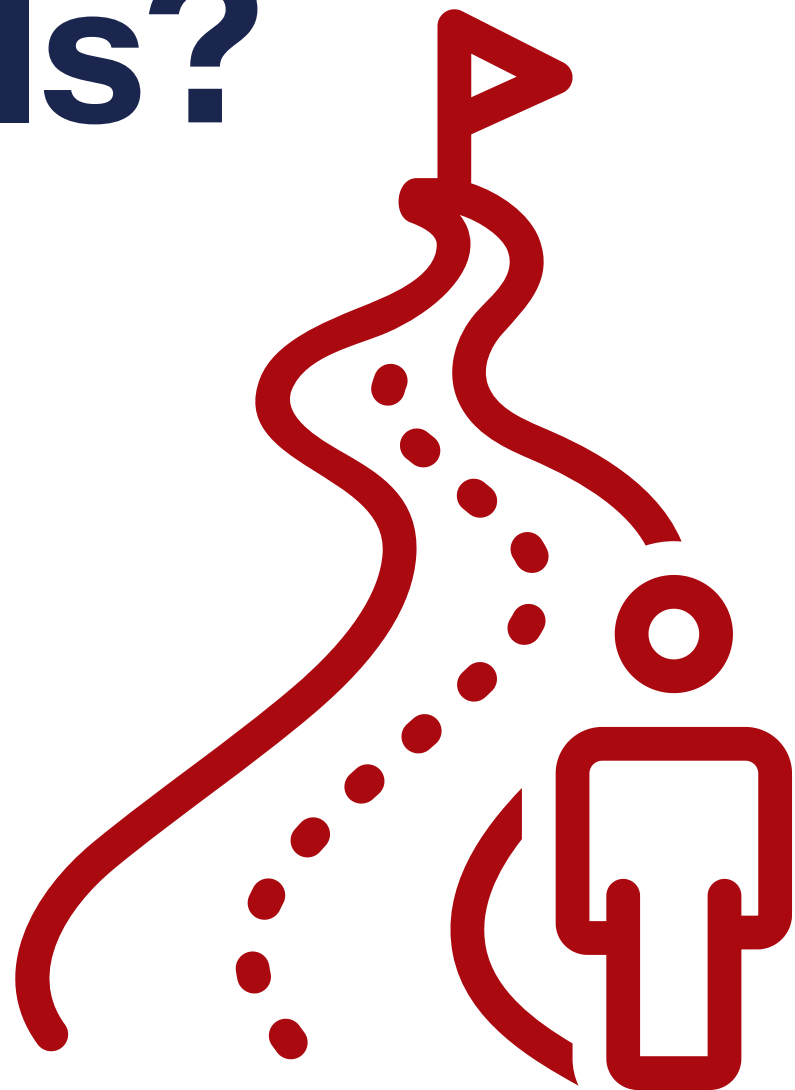- **Short-term objectives** for science communication (raise awareness, spark an interest in a particular topic, make evidence-based information more relatable to the general public - everyday examples, stories with human interest)

- **Long-term goals** for science communication (building trust in science/scientists, influencing policy, improving scientific research, advocating for change, creating an engaging dialog with the community

- Communicate your goals differently depending on the **topic/target audiences/communication channels/content types**

Communicating with the

general public/mass media

Goals
Raise awareness, educate, and encourage action, making the message accessible and relevant to daily life

Tone of voice
Friendly, approachable, and educational, with a simple style that explains complex ideas

Goals
Capture the attention of journalists and inform. The pitch should be clear and concise, newsworthy, highlighting the most critical data

Tone of voice
Formal and focused on concrete information

Customizing your message

- **Stakeholders vs. Target audiences vs. Target groups**

- **Stakeholders** are individuals/organizations with an **interest or investment** in a project/organization. They can influence or be influenced by the outcomes of the research. Funders, regulatory bodies, collaborators...

- **Target audiences** are specific **segments of the general public** intended to receive a message, based on demographics, interests, needs, etc. All residents in regions affected by tick-borne diseases, the general public interested in science

- **Target groups** are **subsets within the broader target audience** that share common characteristics/goals. Outdoor enthusiasts aged 30-45 who regularly engage in activities in tick-prone areas, marginalized communities interested in science

- **One-way** (feedback in comments sections or surveys) vs. **participatory** communication

How to determine your target audience?

- Age range
- Gender
- Socio-economic status
- Occupation
- Purchasing power
- Lifestyle
- Needs
- Pain points
- Desires
- Habits
- Communication channels

Target audience about the **health threats of ticks** and tick-borne pathogens

- **Age range:** 18 to 65 years
- **Gender:** All genders
- **Socio-economic status:** Diverse with varying education levels
- **Occupation:** Citizens, outdoor enthusiasts, hikers, campers, pet owners, families with children, rural residents
- **Purchasing power:** Diverse
- **Lifestyle:** Active lifestyle with a strong interest in outdoor activities, health-conscious individuals
- **Needs:** Information on tick identification, prevention, understanding of tick-borne diseases, and access to free testing services
- **Pain points:** Concerns about health risks from tick bites, confusion about the symptoms of tick-borne diseases, and lack of access to reliable testing resources
- **Desires:** Peace of mind regarding tick exposure, proactive health management, increased awareness about tick-borne diseases, and participation in community health initiatives
- **Habits:** Frequently engaging in outdoor activities
- **Communication channels: One-on-one communication** with medical professionals, **social media platforms** (e.g., Facebook, Instagram), **newsletters,** local health department **announcements, workshops,** educational **webinars, podcasts, websites** focused on public health and tick awareness, **printed materials** (flyers, brochures) distributed in outdoor recreation areas or community centers, **mass media**…

SWOT

+ **WISHES** Analysis
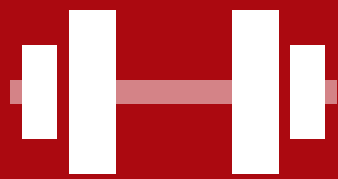
Strenghts
What do you have?

Weaknesses
What you don't have?

Wishes
What do you want to achieve?

Opportunities
For fulfilling wishes

Threat
To consider

Identify **stakeholders'** goals/objectives

Presenting the information to make waves

- Start with an **interesting opening sentence** (hook)

- **Lead with the most valuable insight** and build your messaging to impact your audience

- **Beneficial or off-the-radar content - it is up to you!**

- **Prioritizing the benefits** of a project/research instead of features makes a huge difference to how well a message is received, and how effectively it translates into action.

- Conclude with a **call to action** (CTA). It's crucial to direct your audience toward a single, focused action to avoid confusion (signing up for a newsletter/attending an event/sharing information).

Easy-to-understand language, free from science jargon

- Communication has to be **inclusive,** allowing the information to meet the end-user without barriers, doubts, and loose ends

- In science communication, always **ask yourself:** Does a term have a different meaning in regular conversation? Do you use it to discuss your research with colleagues? Would my neighbor/family member understand it, and is there an alternative you could use for better clarity? Where and when is the audience digesting the message? Are they scared? Are they on the bus? Or listening to a podcast at home?

- **Stay consistent** in addressing the topic. Using terms like "doctor" interchangeably with "physician," "surgeon," or "primary care provider," can create confusion with the audience

Avoid "patchwork" communication

Keep a **recognizable** presence across all platforms and channels, and be **repetitive** about your keynote messages.

- **Avoid using fluff words** because they lack real value in communication (very, seriously, some, just, I think...)

- **Incorporate metaphors/anecdotes** that make multilayered topics more relatable

- Using **storytelling techniques** will not mitigate your scientific rigour

- Invite **dialogue** and actively address misconceptions

Experiment on pre- and post-audio perception

Two video types were presented.

The first: a very fast-paced, chaotic, YouTube-style video to debunk Covid-19 related conspiracy theories

The second: a journalistic report on ex-Covid-19 patients' stories, with a newscast style.

Partakers were separated into 4 breakout rooms where they viewed the two **videos without audio** and had a discussion on their impressions and emotional responses.

Next, they watched the two **videos again with the original audio** and subtitles in the respective languages.

TRESCA workshop participants from Italy

TRESCA workshop design

Sci-comm workshops with citizens organized by TRESCA project (Trustworthy, Reliable and Engaging Scientific Communication Approaches) in December 2020 in Austria, Italy, and the Netherlands

Conclusions

- Develop a **communication style** that is suitable for different types of audiences
- Avoid extreme or **contradictory positions** when presenting topics
- Steer clear of **dumbing things down (deficit model)**
- Showcasing an **attitude of superiority and arrogance** in communicating your messages arouses annoyance and discontent
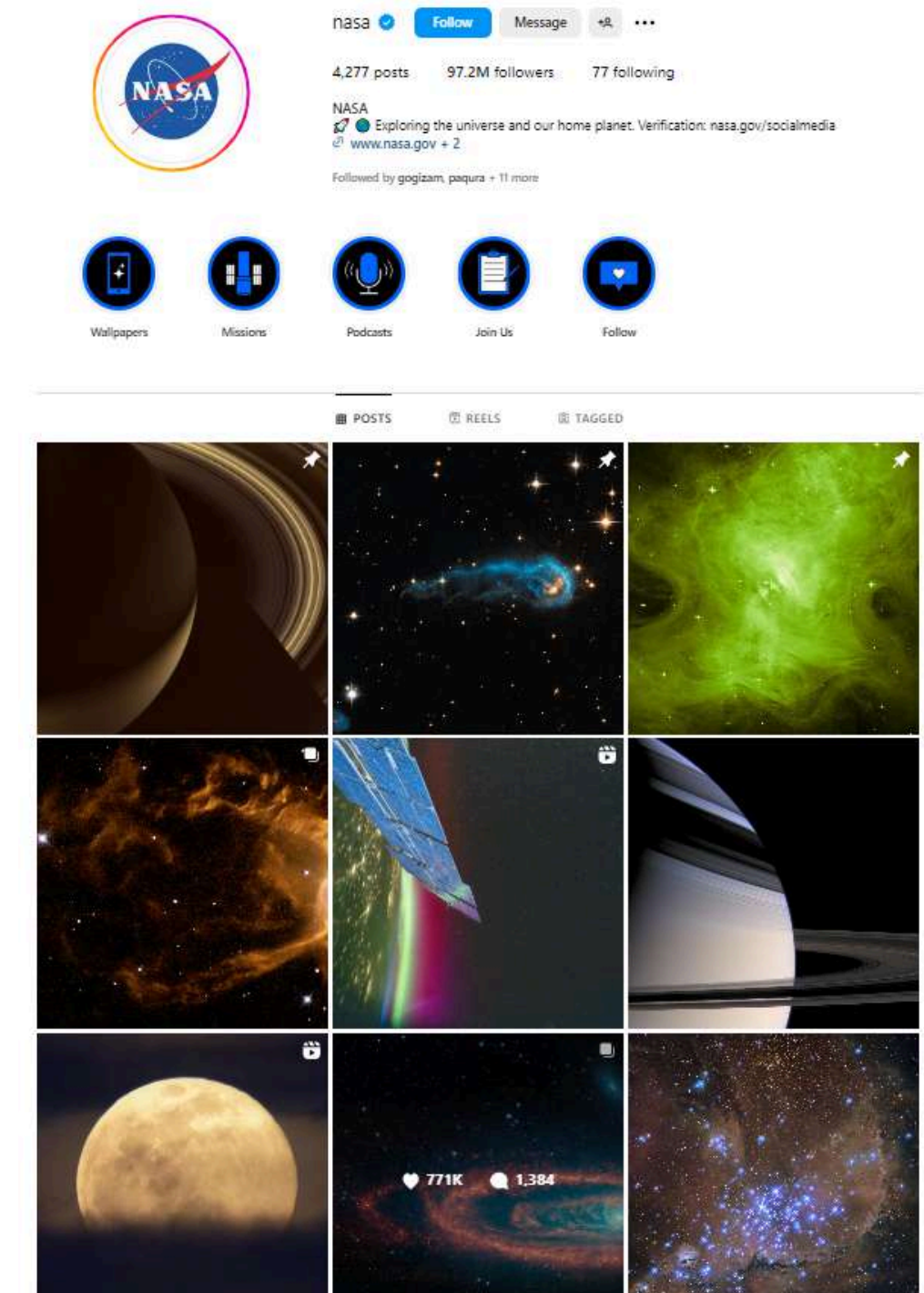- Maintain **contact with the public** to detect useful points of view

Complex **scientific topics** presented as **captivating stories**
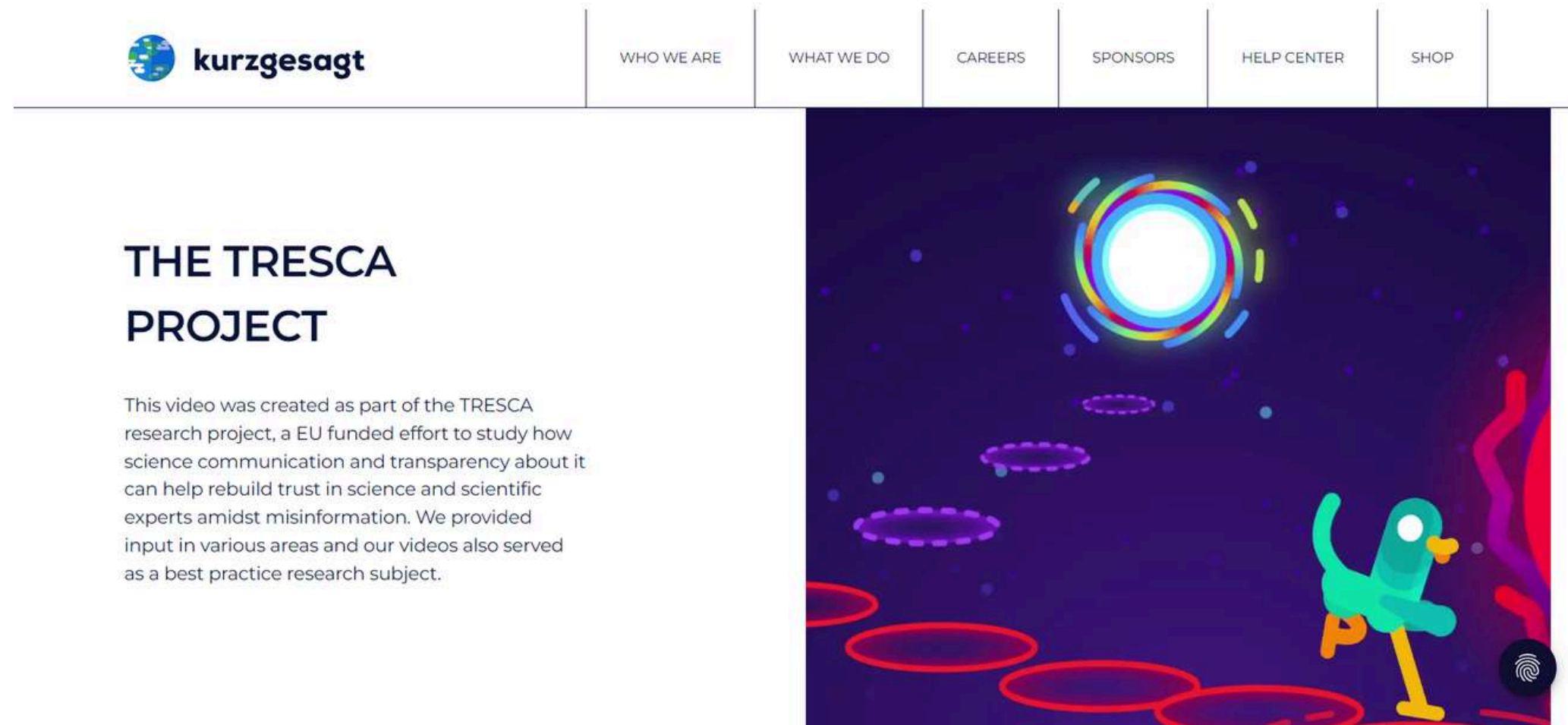
YouTube channel Kurzgesagt for TRESCA (Erasmus University Rotterdam)

NASA on Instagram

Science communication video on climate change

Several **manipulations** were made – the narrator's gender and textual changes to understand how they affect the **overall perceptions** of the content.

The video was perceived positively in terms of being trustworthy, reliable, engaging, and entertaining.

The Kurzgesagt video "Who is responsible for climate change? – Who needs to fix it?"

1. Gender bias

Narrators were perceived to be similar in terms of warmth and trustworthiness, but the **male narrator** was perceived to be **more competent**

2. The perceived aim is a gamechanger Blaming vs. Informing

When respondents believe the aim of the video is to **blame,** they perceive it to be **less trustworthy** ('quite brainwashing' or 'seemed to be aimed at children')

3. Data manipulation

Most participants didn't notice or remember the manipulations. Participants who remembered the negative consequences of climate change for Europe (instead of worldwide) were mentioned, were **more engaged** with the video – leaving a comment about it. Since all respondents reside in the UK, this illustrates the intrinsic tendency to be more concerned by **local** developments

4. Trustworthiness and entertainment go side by side

Respondents who perceived the video to be **entertaining** were more likely to say the video was also trustworthy, reliable, and engaging

5. Accepting uncertainty

No significant negative effects of using **uncertain terms** (e.g., approximately and presenting numbers in ranges) on the video's perceived trustworthiness, reliability, engagement, and entertainment

6. Knowing your audience is a sea change

The inclusion of **prominent sources** enhances **engagement,** but this effect is muted for those who 'believe' more in climate change. This audience is not fond of "over-the-top" stimuli.

Climate change deniers are more likely to perceive the video as less trustworthy when the narrator uses uncertain terms in comparison to believers
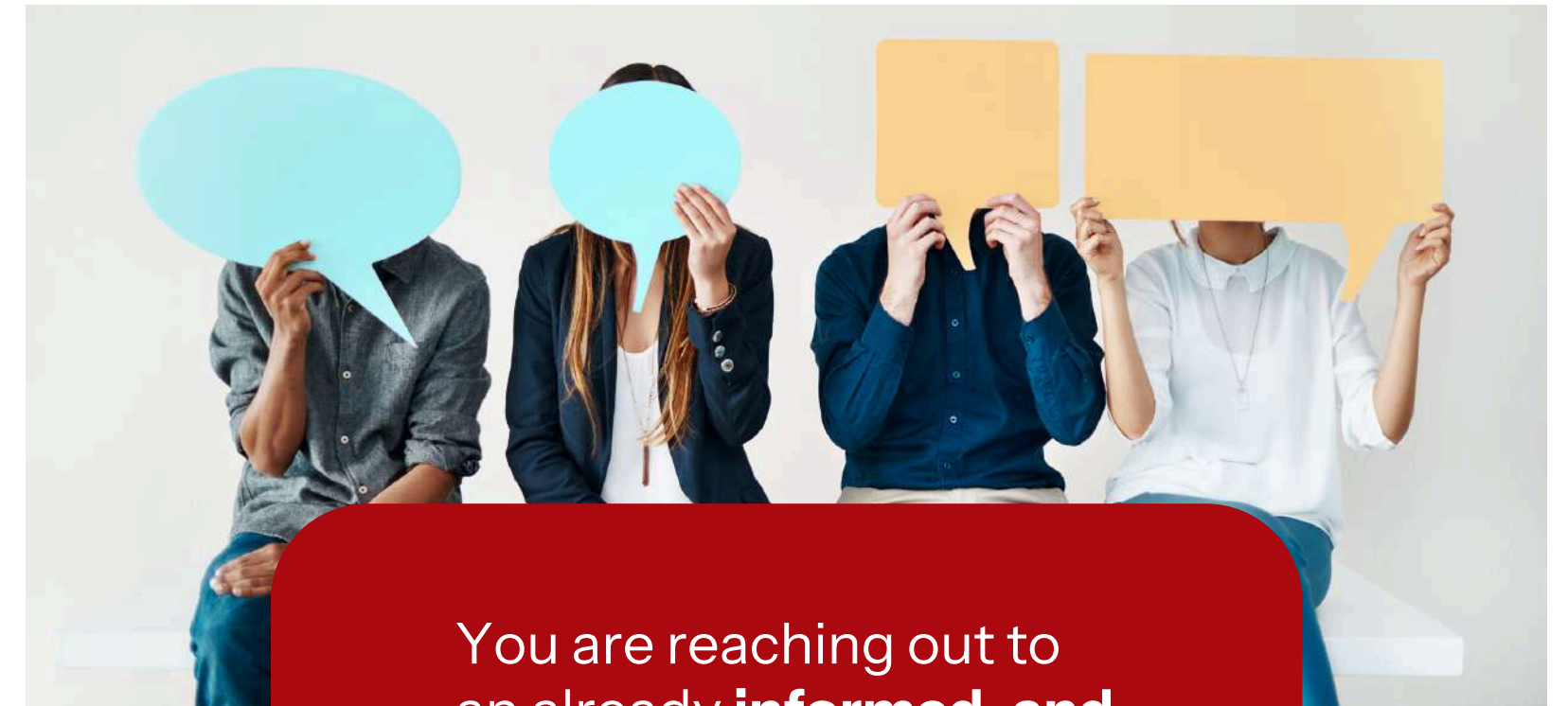
You are reaching out to an already **informed, and very critical audience.**

The voice people like hearing - your voice

- A **formal tone** can convey authority, credibility, and expertise, but it can also sound stiff and unrelatable

- An **informal tone** can express friendliness, benevolence, and originality, but it can also come across as too laid-back, and unprofessional

- Maintain a **balance** between formal and human-to-human addressing, and use appropriate **language elements** that reflect your tone (vocabulary, grammar, formatting, emojis, etc.)

- **Fine-tune your tone of voice** to match the complexity of the topic, the vulnerability of a certain group, or the time frame.

- **Inspire and motivate** the public to take action, whether it's further learning, participation in scientific projects, or behavioral changes

Visualize to maximize

Turn ho-hum to engaging

- **Data visualization tools** are essential for effectively reaching the public

- Choose the **right graphic format**: static, dynamic, or interactive (photos/illustrations/vectors, animations/videos)

- Create digital assets that are **easy to share on social media platforms** (stories, posts, reels), and focus on building engagement, not just raising awareness

- Maintain **consistency in color** usage and typography across all communication platforms

- Use tools like Canva or Adobe Express for **designing,** and Freepik, Vecteezy, Unsplash, and Pixabay for **downloading** free design elements

- Ensure the design is **mobile-responsive**

Case Study

Enable citizens to **collect and provide reports** on 34 insect species, 1 crustacean, 3 plant species, and 2 habitats

www.innat.unimol.it

Best practices (InNat Citizen Scientist project)

- **Website makeover** to make it more accessible, with an in-depth **column** on monitored species
- Constant **update** on the number of validated reports
- **Award ranking** for the most active reporters (gamification)
- Weekly **newsletter**
- **Comic strip** *"Bug Times"* where insects spread and research information on protected species
- **Social media** with biweekly scheduling of posts and an upgrade of stories
- **Telegram account** to interact in a well-timed way with the most loyal reporters
- **Sociological survey** to get to know the target audience and assess the impact that participation in the project has had on scientific learning and awareness
- **Reporting** their data with an eye towards data journalism methods
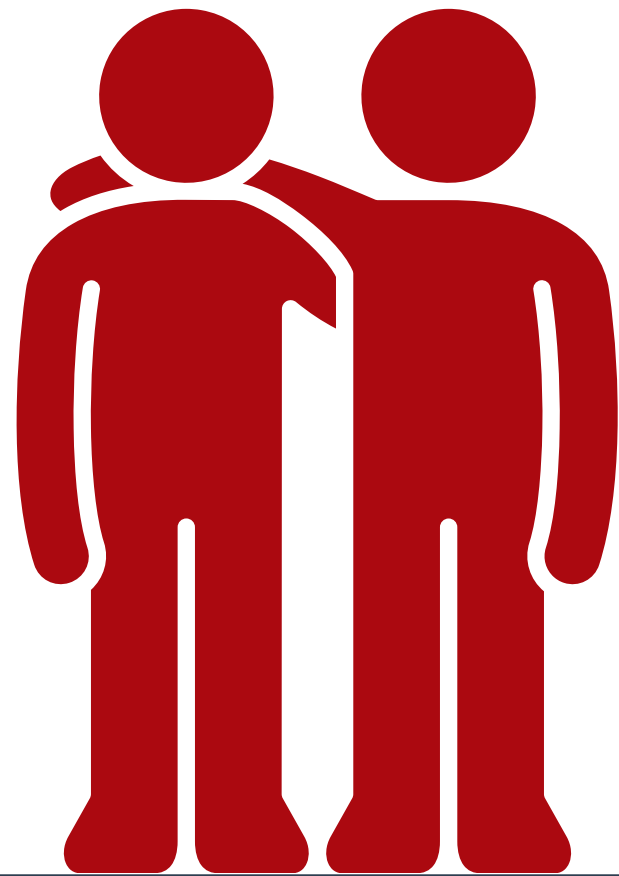
Case Study

Bug Times The origin, 1st Number

Practice to ignite difference

- Always be **helpful,** share insights that resonate with a broader public interest and facilitate gap bridging

- Initiate a **societal dialogue** that fosters understanding and trust

- Seek **feedback and constructive criticism** from peers and audience to refine your communication skills and improve future presentations

- Take **one step at a time** to improve your science communication skills and embed bite-sized communication practice in your daily routine (take a photo while working in the lab, write a post caption, etc.)

- **Share your brilliance, spark the difference, and connect with the world**

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THANK YOU

for watching!

Developing a communication strategy for project closure

Key Tasks:

- **Craft core messages and key outcomes:** Highlight the project's results, its impact on the local and scientific communities, the contributions made by citizens, and potential future projects or collaborations

- **Define communication channels:** Identify the most effective channels to reach your target audience and ensure the message is delivered with maximum impact

- **Establish a timeline:** Set a clear schedule for executing communications, from initial announcements to final reports

- **Present results and blueprints:** Develop a compelling presentation of the project's outcomes, including any blueprints or frameworks for future initiatives

- **Write a post** for Facebook, Instagram, LinkedIn, and X to announce the project ending