





How discoverable are you?

Remember: not just accessibility within academic context!



Open science is not just technology, it's a state of mind.
Sharing is caring.



Cf. previous slide

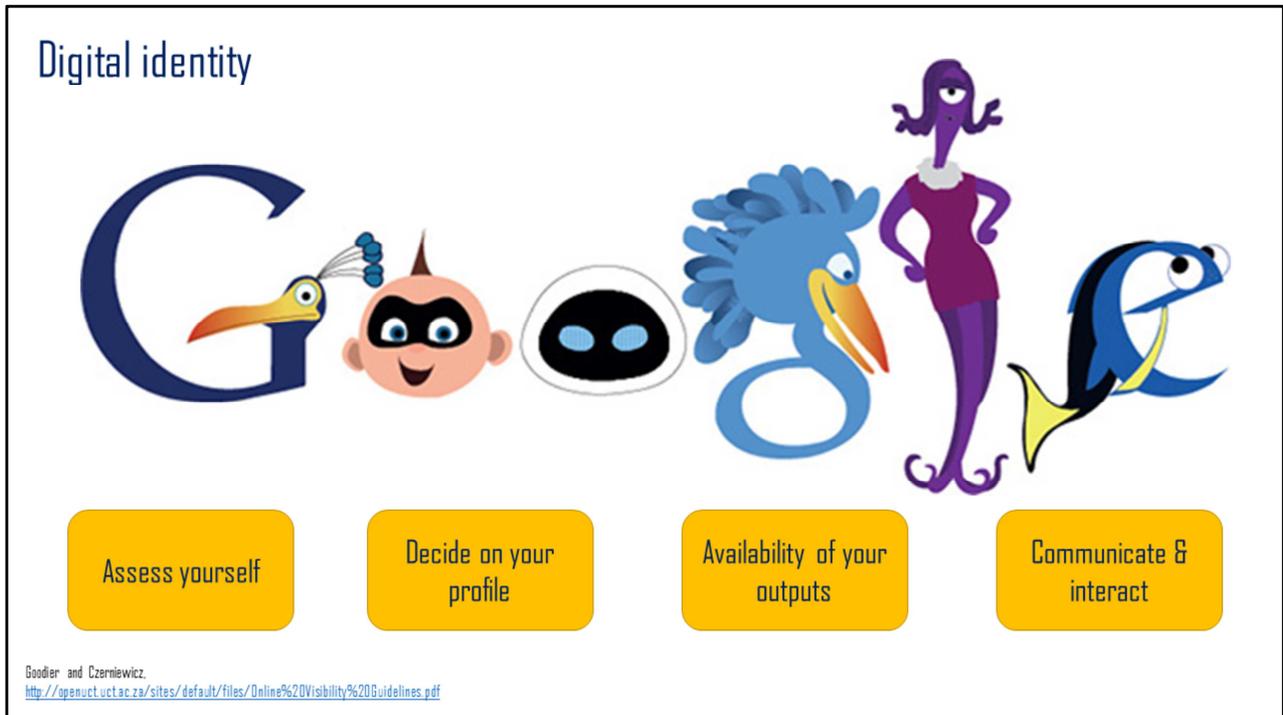
Remember: not just accessibility within academic context!



There are two broad categories of online content to consider when talking about your online presence

- digital footprint is your active contribution to and interaction with the online world
- digital shadow is content about you posted and uploaded by others, as well as automatically generated and collated content

You should try and maximise the former and watch the latter, especially as it is difficult to control. The best way to drown out content about yourself that you may not like is to upload content of your choice.



How do you want to come across? How much time do you have?
Assess what publications and other outputs of yours are already online and then sharing everything else you are able to, including teaching resources and 'popular or informal' resources in a variety of formats.
Start communicating and interacting.



Cf. previous slide

Remember: not just accessibility within academic context!



What will resonate with other people?
CENTRAL IMAGE
POINT of CONNECTION

Not too much: amount, details, nuance

NARRATIVE

 **Abby Nissenbaum**
@abbynissenbaum

Am I the only one who's irked by academic writing advice of "telling a story with your data"?

Writing fanfiction about our data is what got us into the reproducibility crisis in the first place. I'd rather have a less compelling narrative than a flowery account of half-truths.

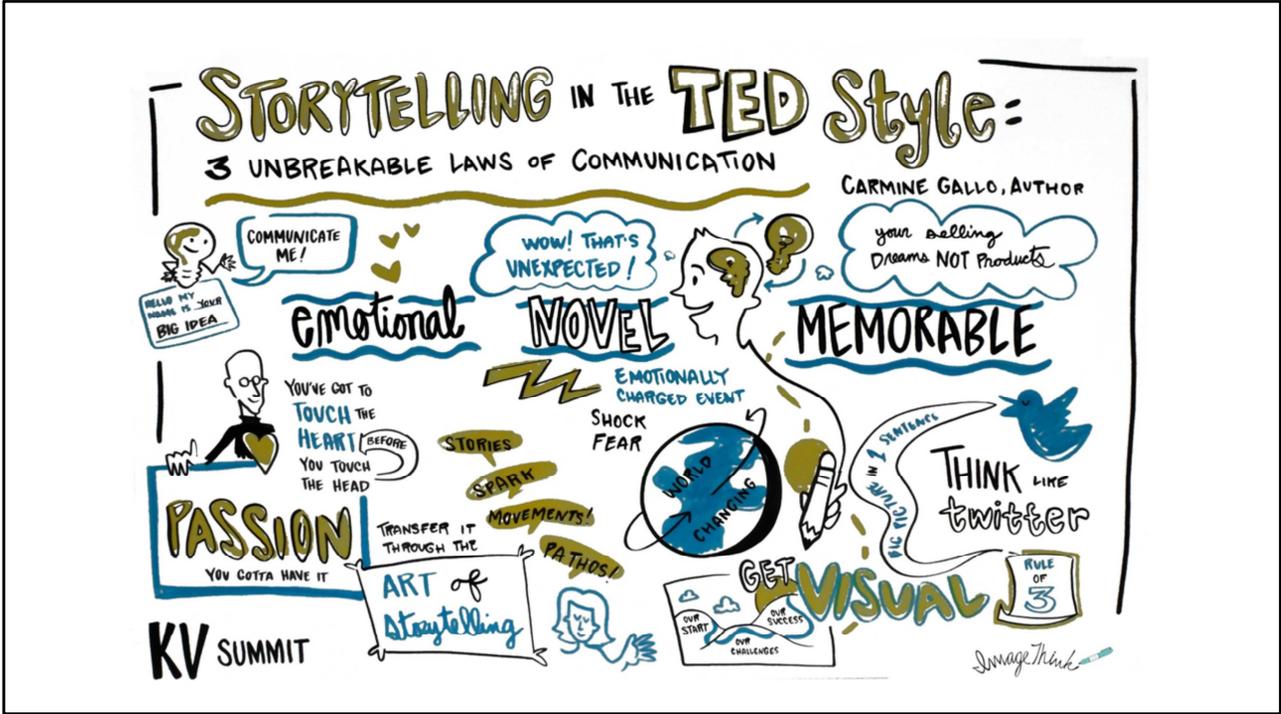
Translate Tweet
5:34pm · 30 Jan 2020 · Twitter for iPhone

The Hero's Journey

Powell, *The Hero with a Thousand Faces*

STORYTELLING

The Hero's Journey is based upon the idea that all heroes and mythological characters proceed through a similar development throughout a trilogy or series. This doesn't only apply to fictional characters. Movie directors often use these concepts in Hollywood when creating an attractive plot line.



* Discuss * Which storytelling device do you use to about your research?



More than tricks of storytelling: be true to yourself and your science, be humble, be vulnerable



Network: of people, knowledge, competences



Look for partners and experts within your organization. You do not need to do everything yourself.

Multiplier effect!

meaningful encounters

Which publics to engage?

| | | |
|---------|---|--|
| High | <p>Hard-to-reach publics who are disinterested but could benefit significantly from engagement</p> <p><i>Find out what would motivate them to engage</i></p> | <p>Easy-to-reach target publics who benefit significantly from engagement</p> <p><i>Reach out systematically in priority order – contact the first one on your list now</i></p> |
| Benefit | <p>Other publics that have little interest and are unlikely to benefit much if they were to engage</p> <p><i>Keep a watching brief as their needs and interests may change over time</i></p> | <p>Easy-to-reach non-target publics may engage more than hard-to-reach publics but benefit less</p> <p><i>Be careful not to focus on these groups at the expense of those who have greater need</i></p> |
| Low | <p>← Level of Interest →</p> | |

Which stakeholders to engage?

| | | |
|-----------|---|--|
| High | <p>Hard-to-reach influential stakeholders who could block or facilitate impact but are not interested enough to prioritise engagement</p> <p><i>Find out what would motivate them to engage</i></p> | <p>Easy-to-reach influential stakeholders who could block or facilitate impact and engage easily/regularly</p> <p><i>Reach out systematically in priority order – contact the first one on your list now</i></p> |
| Influence | <p>Other stakeholders with limited interest or influence, whose interest or influence may change over time</p> <p><i>Keep a watching brief as their needs and interests may change over time</i></p> | <p>Easy-to-reach marginalised stakeholders who may want to block or facilitate impact but have limited influence or voice</p> <p><i>Identify strategic alliances with more powerful stakeholders who share their interests so you can all work together</i></p> |
| Low | <p>← Level of Interest →</p> | |

Who are the beneficiaries of your research?

Knowing about the potential impact of your research, helps to answer this question.

Negative impact?



Who needs to be part of your network?

Who might amplify your message?

Who do you admire?

* EXERCISE * find a twitter account (using users and keywords)

Academic social networks

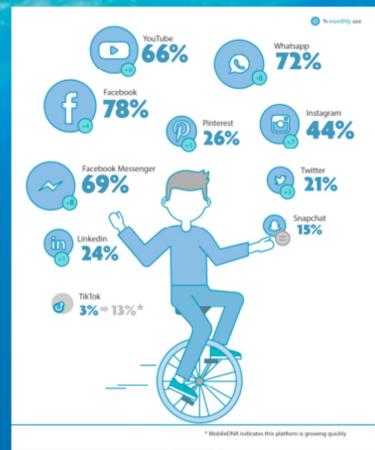
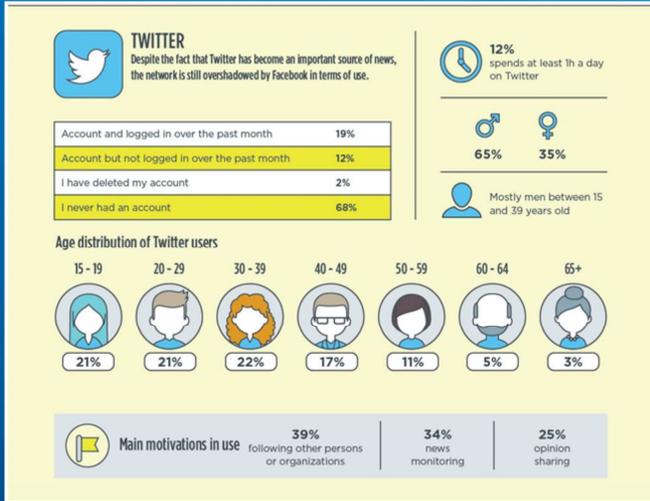


| | Academia.edu | Google Scholar Profiles | LinkedIn | Mendeley | ORCID | ResearcherID | ResearchGate |
|--------------------|-----------------------------------|--|---|-------------------------------------|---|--|--|
| Core purpose | Share research papers | Find research papers and track citations | Manage your professional identity and build your professional network | Manage references and showcase work | Unique identifier to connect researchers to research activity | Manage and share professional information; claim your publications | Make research visible and make connections |
| Source of funding | Commercial | Commercial | Commercial | Commercial | Institutional membership fees, grants and sponsorship | Commercial | Commercial |
| Membership profile | Graduate students and researchers | Authors with an affiliation to an academic institution | Anyone | Students and researchers | Students and researchers | Invited researchers | Students, alumni and researchers |
| Interdisciplinary | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Free membership | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Profile visibility | Public | Public | Public or members only | Public or private | Public or private | Public | Public or private |



The Overview of Online Academic Networks by Piirus is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

Social networks





There are many online tools available for disseminating your research and/or for interacting about science. The important thing is choosing the right tool for your specific goal. And then making it your own and giving it a natural place in your work and life so it does not feel like a chore.



Status anxiety: should academics be using social media? D. Lupton
Reaching out. Nature blog by Soapbox Science (7 June 2012)

It is a nuanced story.

Not everyone is a fan or naturally gifted or even at ease when participating in science engagement and/or social media.

There might even be criticism of peers or mentors.

Institutional rewards and incentives are lacking.

Not everyone's research is applied or sexy.

There is also a worry that we might be evolving towards more of the same: Academic attention economy (cf. Kardashian Index)

*** Why are not doing it? Why are you doing it? ***

IS IT WORTH IT? (OLD STYLE)

Highly tweeted articles were 11 times more likely to be highly cited. (Eysenbach 2011)

One-year follow-up of randomized trial demonstrates that tweeting results in significantly more article citations over time. (Luc e.a. 2020)

Factors driving social media and citations are different. Social media can not be seen as an alternative to citations. (Haustein 2015)

Social media promotion doesn't have a significant effect on article download rates when your readers aren't on social media.

Social media cannot overcome citation delay.

Among social media metrics, citations correlate the most with Twitter.



Altmetric

ALTMETRICS



What do you want to achieve by engaging with social media? What is your communication/outreach strategy?

Consider producing social media content as a normal part of your (working) life

Develop a sense of the advantages and limitations of each different platform

Be realistic about the time available to you. Know who can help you.

Be aware of your digital footprint. Invest in visibility.

Re-use content but adapt. Get your timing and story right.

All about finding a balance & having fun!

Adaptation of Top Tips for academics on blogging and social media by Mark Carrigan



Although it is a big investment and there are some definite challenges, there are great benefits to integrating social media into your research – not just as a way to communicate but also as a means to become a better scholar. Social media offers you the means to interact directly with a broader audience – often without ‘corporate interference’.

Although it can be great fun and many of the social media look flighty (eg. half-life of a tweet is 18 minutes) it should not be taken lightly but approached in a strategic and professional manner.

It’s all about finding the right balance:

- Not overthinking it but using it to your advantage
- Getting into the spirit of sharing and interacting while keeping focus in your own research and not losing yourself in procrastination
- Giving it a natural place in your time management and approaching it so you feel comfortable with it





Twitter is an easy but worthwhile tool to start engaging about your research.

These are some of the benefits:

- Connect with peers and building a scholarly network. Quote: “It’s allowed me to open up new communities for discussions and increase the interdisciplinarity of my research.” (A network boost by M. Baker. Nature, 12 Feb 2015)
- Sharing and finding resources (think ‘open science’)
- Generating and refining ideas
- Honing writing skills: try building up a lucid argument in 140 characters!
- Reputation management (part of larger strategy in managing your digital footprint/shadow)
- Dissemination of your research. Don’t just tweet your new scientific articles but try to capture the attention of more people by making the content accessible.
- Public engagement and creating involvement: why not look for participants this way?
- And remember, there’s a lot of journalists and media outlets on there too...

Jobs & prof. development:

- “Following institutions, companies and individuals on Twitter can offer clues about workplace culture and ongoing projects in a way that static website do not.”
- “Junior researchers are creating identities that don’t have to be routed through

the principal investigator.” (A network boost by M. Baker. Nature, 12 Feb 2015)

It is a great tool for **conferences**:

- Back-channel: capture content & provide feedback, share questions and resources
- Connecting and networking
- Virtual participation

There is of course a big social element to it (especially for ECRs):

- Break isolation
- Look over the fence
- Find fellow victims
- Real-life scholar
- Sheer fun of it

- It's a space to connect with a community of like-minded others (who are absent on my campus).
- It's a space where I feel valued (in contrast to the daily devaluation and disrespect I experience on campus).
- It's a space where I receive *immediate* feedback and engagement, and that's stimulating to my thinking (as opposed to the agonizingly slow process of academic publishing).
- It's a space where I feel like I can be myself (instead of putting on a professional mask or having to code-switch in order to be heard).
- It's a space where I feel important (even a sense of celebrity), because having lots of Twitter followers and retweets makes me feel like I'm having a larger impact than my citation index.
- It is a welcome escape (because my real life is on a remote campus where I have limited social relationships and feel deeply isolated).

Let's Talk about Twitter, Kerry Ann Rockquemore, Inside Higher Ed (20 May 2015)

 **christine liu** @christineluuart 3d
 I just got some of the best professional advice from a complete stranger. Don't let anyone tell you Twitter isn't networking!

 **Sarah Boon** @SnowHydro 180d
 I love twitter b/c it feeds my magpie mind. I don't want strict 'curation'. I want the whole glorious mess of it.

Twitter is not a *replacement* for lengthy, well-researched, well-argued considerations of a topic but a valuable accessory to them,

 **Morwenna Carr** @17CentPlayer @WetheHumanities as an ECR. Twitter lets me be in an academic community when I'm living in a tiny village and not working in an institution.

 **David Steen, Ph.D.** @Aloha... 2d
 I believe Twitter has helped revolutionize which scientists get a voice because it provides them with a tool they can independently use to reach others. So when academics say it is a waste of time, I hear them advocating for the old system in which they choose who speaks.

 **Ruben Verborah** @RubenVerborgh 33d
 Thanks to @twitter I'm a better researcher & teacher. My message reaches people much faster than I imagined possible #LoveTwitter #WebWeWant

 **AcademicsSay** 4:02am via Twitter for iPhone
 Twitter. Because one should not have to wait 5-8 months to have one's writing corrected by academics.

 **Ben Dhooge** @DhoogeBen · Nov 22
 Getting to know colleagues you had only seen on twitter before... Who said social media don't work? @russianprof #aseees14



science of twitter

Disciplinary Differences in Twitter Scholarly Communication
Kim Holmberg¹ and Mike Thelwall²
Biochemists retweeted substantially more than researchers in the other disciplines. Researchers in digital humanities and cognitive science used Twitter more for conversations, while researchers in economics shared the most links. Finally, whilst researchers in biochemistry, astrophysics, cheminformatics and digital humanities seemed to use Twitter for scholarly communication, scientific use of Twitter in economics, sociology and history of science appeared to be marginal.

A systematic identification and analysis of scientists on Twitter
Qing Ke, Yong-Yeol Ahn, Cassidy R. Sugimoto
Our analysis suggests that social scientists are overrepresented on Twitter, given their proportional representation in the scientific workforce, and that mathematicians are particularly underrepresented.

Academic scientists on Twitter start by preaching to the choir but can eventually sing from the rooftops. Twitter is partly an echo chamber for academic scientists where, on average, tweeting academic scientists have more followers who are scientists than who are non-scientists. This pattern is particularly marked for academic scientists who have fewer than 1000 followers: these academics are primarily followed by other scientists. However, beyond this threshold, the tweets of academic scientists can reach a more varied audience, composed primarily of non-scientists. Twitter then has the potential to function as an outreach tool.

Scientists on Twitter: Preaching to the choir or singing from the rooftops?
Isabelle M. Côté^{1*} and Emily S. Darling^{2*}
For audience engagement, content matters (Bik et al. 2015). Tweets that contain hyperlinks and hashtags are more likely to be retweeted (e.g., Nagarajan et al. 2010; Suh et al. 2010; Pang and Law 2017), as are tweets that contain images (e.g., Bruni et al. 2012). Even more important for the likelihood of being retweeted is the topical relevance of the tweet to the follower (Shi et al. 2017), which speaks to the need for scientists to make their message matter to their intended audiences (Baron 2010). One final important lesson is that ordinary users that become influential (i.e., that are mentioned and (or) retweeted frequently) tend to limit their tweets to narrow topics (Cha et al. 2010). Thus, although Twitter influence can be gained accidentally because of timing, circumstance, or emotion (e.g., Jackson and Spencer 2017), it is more often the result of concerted and persistent effort.

| Reason | Percentage |
|---------------------------------|------------|
| Do not use professionally | 70% |
| Curiosity only | 60% |
| In case contacted | 40% |
| Track metrics | 30% |
| Discover jobs | 20% |
| Discover peers | 15% |
| Discover recommended papers | 10% |
| Contact peers | 10% |
| Post (work) content | 10% |
| Share links to authored content | 10% |
| Actively discuss research | 10% |
| Comment on research | 10% |
| Follow discussions | 10% |

Online collaboration: Scientists and the social network, Richard Van Noorden, Nature 512, 126–129 (14 August 2014).

Why Academics REALLY Use Twitter

| Reason | Percentage |
|--|------------|
| Avoid writing | 70% |
| How did you know I use Twitter? My account is anonymous. | 60% |
| "Outreach" that does not involve coming into physical contact with other human beings. | 40% |
| Read an article on Nature that said Academics use it for serious reasons. | 30% |
| Look for a job in case I get tired/denied Tenure. | 20% |
| Gives me something to do during boring seminars. | 15% |
| Gives me something to do during boring meetings. | 15% |
| Gives me something to do while talking to boring students. | 15% |
| Procrastinate | 10% |
| Gives me an outlet to make snide comments about other academics. | 10% |
| Hopefully interact with people I have an intellectual crush on. | 10% |
| Gossip about people in my field. | 10% |
| Legitimise my job surfing. | 10% |

WWW.PHDCOMICS.COM

Dr. Paige Jarreau @FromTheLabBench

Totally unscientific but interesting! I love that scientists are recognizing that tweeps are looking for interaction/engagement. But interesting considering that most lay audiences of science (blogs, and perhaps microblogs) would be looking mostly for entertainment & ur thoughts!

Translate Tweet

Dr. Paige Jarreau @FromTheLabBench

Scientists, what do you think your social media followers are looking for most in your Tweets?

| | |
|-------------------------|-----|
| My opinions / thoughts | 11% |
| Interaction / community | 41% |
| Entertainment | 15% |
| Unique sci information | 33% |

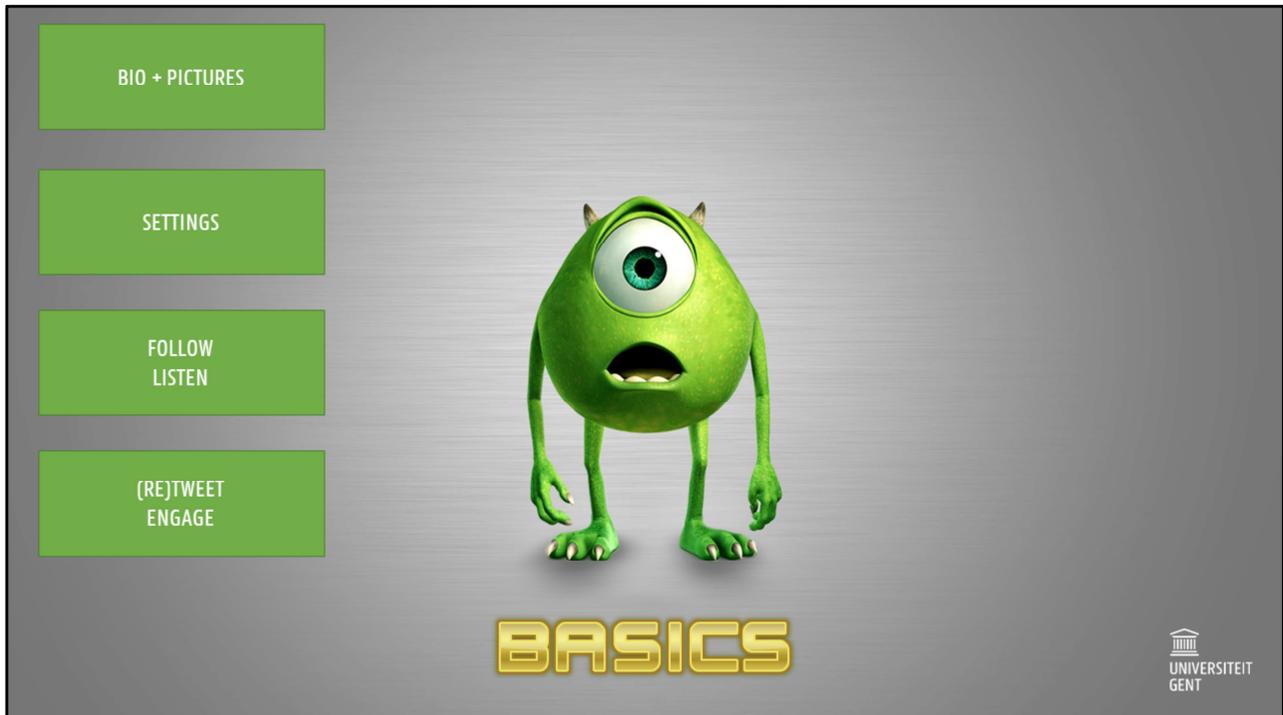
499 votes · 5 hours 41 minutes left

5/9/18, 12:41 AM from Baltimore, MD

1:01am · 9 May 2018 · Twitter for iPhone

The image shows a social media profile page with a bio section on the left and a grid of tweets on the right. The bio section is titled "BIO + PICTURES" and lists several categories: "Your institutional affiliation", "Your research interests", "Other accounts you're involved with", "Your personal interests", "Hashtags you contributed to", "An additional website", "Picture (incl. banner)", and "(Pinned tweet)". The tweets are from various users, including Roel Baets, Jeroen Beekman, Philippe Smet, LCP@UGent, Peter Dubruel, and Veerle Cnudde. Each tweet includes a profile picture, name, handle, bio, location, and join date. The profile picture is a circular image of a person's face. The bio is a short text description of the user. The handle is the user's social media name. The location is the user's current location. The join date is the date the user joined the platform. The tweets are arranged in a grid, with each tweet occupying a rectangular space. The background of the profile page is a light gray color. The bio section is a solid orange color. The tweets are white with a light gray border. The profile picture is a circular image of a person's face. The bio is a short text description of the user. The handle is the user's social media name. The location is the user's current location. The join date is the date the user joined the platform.

Bio: important! Have a look at yours > management of expectations



Bio: important! Have a look at yours > management of expectations

Settings: more is good at the start

Follow: Twitter etiquette does not require that you follow someone just because they follow you, but following someone is a way of indicating your presence to them.

(Re)Tweet: everything is public! (except direct messages) - reply as thread – retweet with quote

Engage: follow up! Engage influencers

Compose new Tweet

What's happening?

Ghent Uni Research @ResearchUGent · Mar 28

Slides of my **@PostDoCUGent** workshop on building a career through **#scicomm** are now online: [slideshare.net/sterretje8/the ...](https://www.slideshare.net/sterretje8/the-skills-cross-over) **#scicomm4postdoc**

THEMATIC HASHTAG

PREVIEW OF LINK

MENTION

EVENT HASHTAG

EXTRA MENU

- Share via Direct Message
- Copy link to Tweet
- Embed Tweet
- Pin to your profile page
- Delete Tweet
- Add to new Moment

The Skills Cross-over: building a career through sci...
Workshop for postdoctoral researchers - 28 March 2017
slideshare.net

1 REPLIES 4 RETWEETS 10 'LIKES' ANALYTICS

GHENT UNIVERSITY

The image shows a screenshot of a Twitter thread on a blue background with white clouds. A central meme overlay reads: "You will read this first" in a white box with a black border, and "And then you will read this" in a black box with a white border, with "Then this one" below it. The thread includes tweets from @compomics, @cesapo, @pcmasuzzo, and @StVanderputten. A "From ResearchUGent" window is open at the top right, and a reply box is at the bottom.

Compomics @compomics · 17m
I need to retweet this again. Required reading, everyone! No excuses! If you're a scientist, you need to have read this article. [And you will read this at the end](#)

Juan A. Vizcaino @jua
You cannot miss this -> [staggeringly profitable t](#) [scientific publishing bac](#) [theguardian.com/scienc](#)

From ResearchUGent

César Urbina-Blanco @cesapo · 7m
#CompChem Does anyone know of an alternative free program to read intermediate optimized structures for Gaussian16? #RealTimeChem

Paola Masuzzo @pcmasuzzo · 13m
Totally agreed.

Compomics @compomics
I need to retweet this again. Required reading, everyone! No excuses! If you're a scientist, you need to have read this article. [twitter.com/juan_vizcaino/...](#)

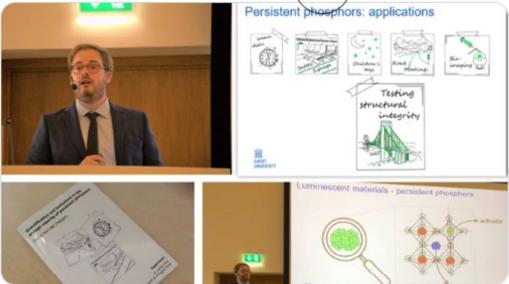
Steven Vanderputten @StVanderputten · 38m
Join us f. sessions 530/630 @IMC_Leeds next Tuesday and hear the latest on the development of monastic orders! @ResearchUGent @MedievalUGent

Replying to @StVanderputten @IMC_Leeds and @MedievalUGent

GHENT UNIVERSITY

LumiLab UGent @UGentLumiLab · 17h

Yesterday David Van der Heggen (@David_VdHeggen) successfully defended his #PhD thesis at @ugent_fwe on how good persistent #phosphors (aka glow in the dark stuff) are and what loss mechanisms need to be tackled. Short thread with highlights of David's work! 1/n



Philippe Smet and David Van der Heggen

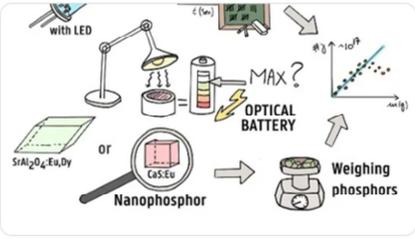
3 3 14

Show this thread

LumiLab UGent @UGentLumiLab · 17h

Replying to @UGentLumiLab

First, David presented a method to accurately measure how much #energy can be stored in such a persistent phosphor, essentially by counting the number of #photons emitted under specific experimental conditions. mdpi.com/1996-1944/10/8... (#OA via @Materials_mdpi) 2/n



Philippe Smet

1 1 4

LumiLab UGent @UGentLumiLab · 17h

This method was also applied to evaluate the storage capacity of a nano-sized #dosimeter based on a Tb³⁺ doped Nd(Gd,Lu)F₃ phosphor. So feel free to apply the approach to your own storage phosphors! 3/n mdpi.com/2079-4991/9/8/... (#OA via @Nano_MDPI) 3/n



BIO + PICTURES

How is it then possible to come up with the best time to post your message? In the largest study of its kind, we analyzed 144 million posts and 1.1 billion reactions to understand this problem and come up with a solution. Our primary finding is this – there is no single “best” time that works for everyone.

Most active hours of ResearchUGent's followers

This chart breaks down the hourly Twitter activity of ResearchUGent's followers.

| Hour | Percent of their tweets |
|------|-------------------------|
| 00 | 1.5 |
| 01 | 1.3 |
| 02 | 0.8 |
| 03 | 0.8 |
| 04 | 0.7 |
| 05 | 0.7 |
| 06 | 1.2 |
| 07 | 3.0 |
| 08 | 4.8 |
| 09 | 6.5 |
| 10 | 6.3 |
| 11 | 6.4 |
| 12 | 5.8 |
| 13 | 6.4 |
| 14 | 6.6 |
| 15 | 6.2 |
| 16 | 6.8 |
| 17 | 5.9 |
| 18 | 5.0 |
| 19 | 5.2 |
| 20 | 5.3 |
| 21 | 4.7 |
| 22 | 4.5 |
| 23 | 2.6 |

SETTING

FOLLOW LIST

(RE)TWEET ENGAGEMENT

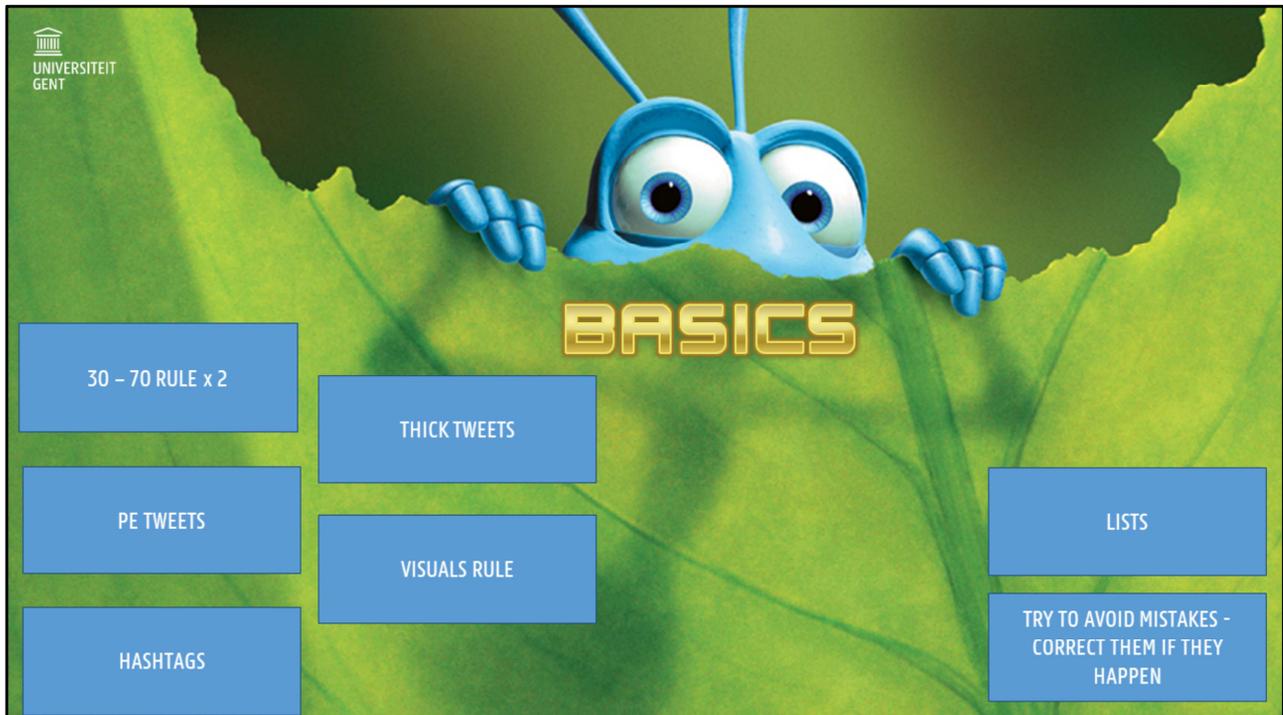
TIMING VISIBILITY

SCHEDULING?

BASICS

UNIVERSITEIT GENT

Timing: get to know your audience
Visibility: advertise your presence



Mixture of about 30% chatter and 70% content is seen as a golden standard.

Doesn't have to be all original – again 30/70

David Silver - thin tweets are posts that convey one layer of information. thick tweets convey two or more, often with help from a hyperlink, visual and/or mention.

PE tweets: people want to win, share, laugh, be amazed

Hashtags: not too much, not too long, check double meaning, create one and advertise

Lists: tip! Create lists as you meet people/attend events



Hiide Crevits retweeted **Research@UGent** @ResearchUGent · 1h
Opiniebijdragen van #UGent-classici lijken indruk te hebben gemaakt op alumna @crevits. Mooie dialoog, mooie impact! pic.twitter.com/soJcnTAVAK

Ghent University Research · 5d
For the next two days Flemish #scicomm crazy researchers will be attending an online version of the annual summer school #letstalkscience - happy to join them so expect some sporadic tweets :) letstalkscience.be

Philippe Smet @pfsmet
Replying to @ResearchUGent
Sad to miss this annual tradition, as a pile of exams still need to be scored. But if you all promise to use a single hashtag (#letstalkscience ?), I can later easily check the #scicomm experiences, emotions, discussions and tips&tricks!

Jan Hullaert @JHullaert · 17m
The bright red color of the furfuryl cation in a (4+3)-cycloaddition reaction
#RealTimeChem #ChemTogether @ResearchUGent

Éva @halbevi · 19m
Processing nettles for textiles with the use of flint tools. Pretty tough work. @ArcheoUGent @ResearchUGent #phdlife #experimental #Archaeology #repectforstoneagepeople

PhilMedEthics @PhilMedEthics · 2h
Also an ethical challenge in health care: how should we handle personal medical information stored in Electronic Medical Records and how much autonomous choice do patients have to decide what happens with their medical data?

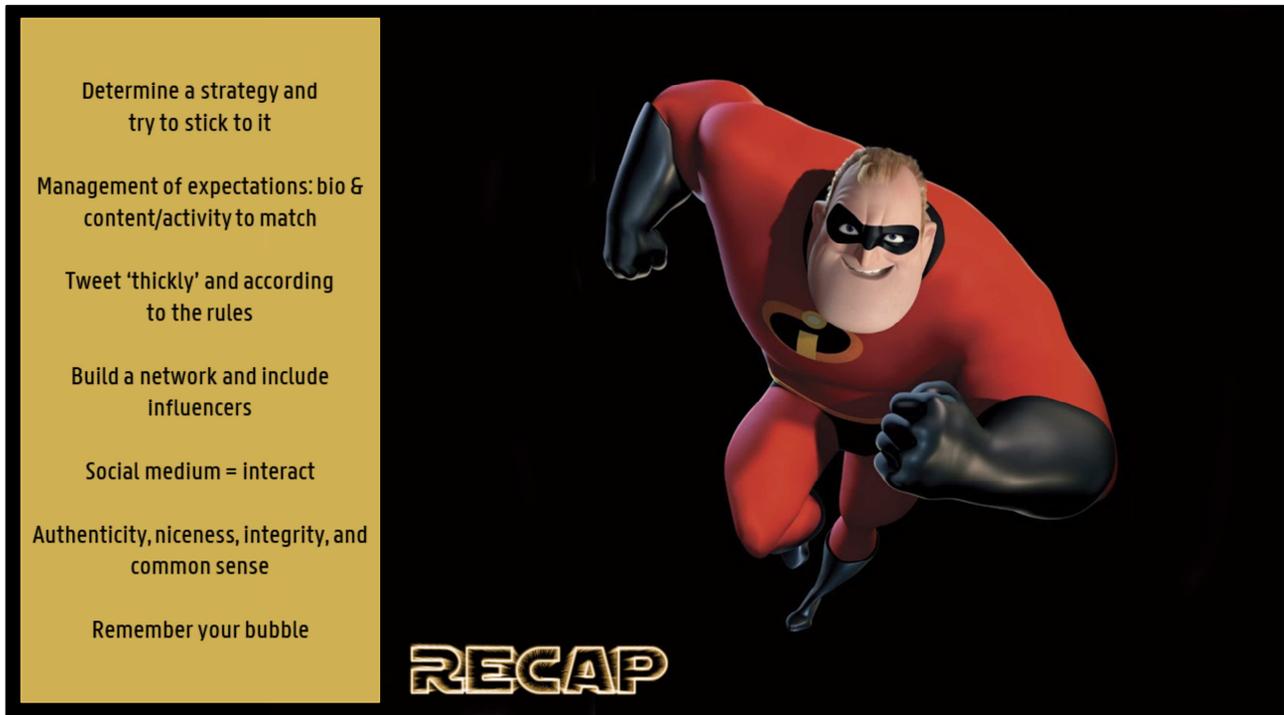
Ruben Verborgh @RubenVerborgh
Really satisfied with the broad overview and deep insights in @RolandLegrand's piece about our Solid work in @tjd. This is not just tech; it's a larger societal challenge to regain control of our personal data and to get back choice. tjd.be/dossiers/nieuw... [NL]

Ruben Verborgh @RubenVerborgh
Replying to @PhilMedEthics
Fascinating timing, right now in a meeting about this very topic (from a technical perspective). Feel free to get in touch via email!

Matthew Shawkey @mdshawkey · 1d
Does anyone have experience (good/bad) with benchtop SEM's? We are comparison shopping now, looking at models from Phenom, Hitachi, SEC..

Steven Goossens @StevenGoossens
Replying to @mdshawkey
Hey @mdshawkey, I have tried one a while ago at vib.be/en/research/sc... maby you can contact prof. Beeckman they use several benchtop SEM's for their research.

IMBRSea @IMBRSea · 5d
Replying to @ResearchUGent
Hi @ResearchUGent IMBRSea is having a live online Symposium right now where students are presenting their thesis and professional practice. We are talking marine sciences #letstalkscience



Five indicators that you are tweeting right:

1. Your followers are reacting: you should be able to see a reaction ripple through your feed.
2. Your number of followers is steadily and naturally growing. If your follower numbers are falling, tweet less; if they're static, tweet more.
3. The right people are seeing and responding to your tweets. Connect with the influencers.
4. You treat Twitter interactions differently than promotions. If you are using your Twitter account strictly as a promotional channel, people will treat it as such.
5. Your posts yield real results.

Cheplygina V, Hermans F, Albers C,
Bielczyk N, Smeets I (2020) Ten simple rules for
getting started on Twitter as a scientist. PLoS
Comput Biol 16(2). [https://doi.org/
10.1371/journal.pcbi.1007513](https://doi.org/10.1371/journal.pcbi.1007513)



Darling ES, Shiffman D, Côté IM, Drew JA. 2013. The role of
Twitter in the life cycle of a scientific publication. PeerJ PrePrints
<https://doi.org/10.7287/peerj.preprints.18v1>

Jonathan

AMA

Thank you for participating!

Esther De Smet
Research Department
Ghent University
@sterretje8



Thank you, Pixar, for the illustrations!