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Online Impression Management for Scientists

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Abstract
The aim of the article is to support scientists in managing their online presence. In this article, online presence is considered to be a part of scientists' overall self-presentation strategy, thus necessitating a complex, holistic approach. Therefore self-presentation is first discussed on the basis of the impression management theory by Erving Goffman. Previous empirical studies are then used to apply the theory to the management of Internet presentation, with focus on scientists' professional online presence. Grounded in existing empirical research and using the impression management theory, a framework is derived identifying key issues of the management of scientists' online profiles. The framework is a pragmatic instrument that supports strategic development of scientists Internet presence. At the same time, the identified factors can provide a foundation for structured yet holistic research into online self-presentation.

Keywords: impression management, self-presentation, web pages, profiling, scientists, science communication

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1 Introduction

This article presents a discussion of the impression theory by Erving Goffman (1959, 1963) and suggests its application to self-presentation of scientists on the Internet. The Internet has become a space for world-wide interaction (Hine, 2001). Formerly a text-based, richness-lacking channel (Daft & Lengel, 1984), the Internet now provides a variety of communication platforms. Due to its world-wide accessibility, scientists (among others) use it to present themselves and their work (Hess, 2002). Scientists are often expected to create profiles on institutional web pages (Hess, 2002) and they may also create profiles on social networking systems, or share their thoughts on blogs. However, as a result of to the growing number of available platforms and the increased complexity of their features, management of an online presence can require a considerable effort.

In this article, decisions concerning the online self-presentation are considered a part of scientists' personal communication strategy (Reychav & Teeni, 2009; Mostert & Raadgever, 2008). As such, the creation and management of an online self-presentation of a scientist needs to be treated with deliberation. In order to point out critical issues in the design of an online presentation, this article employs the theory of impression management by Erving Goffman (1959, 1963). The theory describes principles that govern the presentation of self in everyday encounters (Goffman, 1959). By applying it to the virtual presentation of scientists, it is possible to identify decision-making areas and concrete questions connected to them. The purpose of this article is to discuss the theoretical background of impression management and apply it to Internet presentation. Using this foundation, the article also presents a pragmatic decision framework for the design or maintenance of scientists' online presence. Furthermore, to ensure the usability of the framework, case discussions and an overview of available tools are offered to illustrate the framework's application.

Online presentation, as a part of a scientist's self-presentation, is a complex issue. The article thus first presents the underlying impression-management theory by Erving Goffman (see Section 2). The applicability of impression management to interaction on the Internet is discussed in Section 3. Section 4 presents an overview of

existing literature on the usage of Internet platforms (in particular HTML web pages, social networking services, blogs, and microblogs) for self-presentation, both by general public and by scientists. Using these findings and applying the impression-management theory, a decision framework is proposed in Section 5 and its application discussed in detail. The discussion is further supplemented by the appendices, which provide case examples of application (see Appendix A) and a review of online tools in relation to the framework (see Appendix B). The understanding of online self-presentation behaviour and the knowledge of key decision areas can encourage scientists to consider their online presence as a strategic issue. Using systematic consideration as outlined in the framework can reduce and focus efforts needed for the management of online profiles.

2 Impression Management Theory

In the series of his publications, Erving Goffman uses a dramaturgy metaphor to explain the self-presentation during social interaction (Kenneth, 2011, p. 73). Each encounter can be described as a 'performance', where the participants adopt the roles of performers and audience. During the performance, each participant acts out a character - the 'self' - according to his or her understanding of the encounter and aims (Goffman, 1959, pp. 1-3). The self, that is being presented, is constructed from verbal and non-verbal cues given or given off to others with the aim of purposefully creating a particular impression (Goffman, 1959, pp. 1-6). While this may appear calculating or even deceitful, the participants use impression management to sustain undisturbed interaction and prevent embarrassment (Goffman, 1956).

2.1 Performance

When individuals meet to interact, they have to present themselves. According to Erving Goffman (1959), however, this is by no means a trivial issue. The self presented to others is "not an organic thing that has a specific location, whose fundamental fate is to be born, to mature, and to die; it is a dramatic effect arising diffusely from a scene that is presented" (Goffman, 1959, pp. 252-253). The self

thus, is always a story told to a specific audience (Kenneth, 2011, p. 73). Goffman recognises three levels of identity: the ego identity, the personal identity, and the social identity (Goffman, 1963; Kenneth, 2011). The ego identity can be described as the self that individuals present to themselves and to that they are emotionally attached. The personal identity is the self that individuals present to close friends and family. The social identity is presented to more distant others and is closely related to social roles. Because the ego identity is not accessible, individuals rely on external cues to make inferences about the 'true selves' of others. The impression projected on a particular occasion is managed by intentionally or unintentionally providing such cues.

Goffman's theory of impression management explains the behaviour of individuals during face-to-face encounters, i.e. interactions that individuals have during a particular interval of continuous presence (Goffman, 1959, p. 15). A performance is "all the activity of a given participant on a given occasion which serves to influence in any way any of the other participants" (Goffman, 1959, p. 15). A performance is staged in a particular 'setting', which contains scenic parts of sign equipment. These are usually geographically fixed (e.g. an office with its furniture). The performers project their definition of the situation using a 'personal front', described as the sign equipment directly attached to the person of the performer (e.g. sex, age, clothes, car, but also bodily gestures, mimic), consisting of appearance and manner (Goffman, 1959, p. 24-25). Appearance are signs informing the audience about the social status of the performer, while manner indicates the role that the performer will play during the interaction. It has to be noted, however, that the performers are often not allowed to freely create the front or influence the setting. Often these are given by the role they act (e.g. the performance of a salesperson is placed in a setting of a particular shop, the appearance may be shaped by a corporate dresscode or a uniform and the manner influenced by corporate conduct policy) (Goffman, 1959, pp. 27-29).

In order to reach their aims, it is important for the performers to maintain a coherent act that can be supported throughout the interaction. For this purpose, they can actively manipulate the setting, their appearance, and their manner and respond to the cues of the audience. Goffman (1959, pp. 30 et seq.) points out some practices that help the performers achieve their ends: dramatic realisation, mystification,

misrepresentation, and idealisation. Dramatic realisation is used to stress the significance of the performers activities, which might be otherwise underestimated by the audience. This may go as far as to ritualise parts of the performance in order to increase it effect (mystification). Misrepresentation describes a deliberately false presentation of facts. While in some cases, the revelation of performance as a misrepresentation can be disturbing (e.g. lying about ones accomplishments), in other cases it may be quite acceptable to the audience (e.g. women dying their hair) or even necessary (e.g. tidying up a flat before visitors come). The acceptance depends in the setting and the audience. In many situations, the performers are also held up to perform according to an ideal expectation of the audience (often a stereotype). The idealisation of the performance can aid the achievement of the performers aims, while the departure from this ideal could discredit the performed character (e.g. a student departing from the ideal of interested attention and falling asleep during a lecture).

2.2 Roles and setting

The participants in a performance are divided into teams of performers, and audience, as well as outsiders, who are excluded from the performance. The team size may vary and may consist of just one member (even performances without audience or without performers are thinkable) (Goffman, 1959, p. 79-81). The division in performers, audience, and outsiders is not fixed and the roles of the performing teams can vary throughout the interaction. The membership in teams is, however, expected to remain intact (Goffman, 1959, pp. 141-166). Changing team or misrepresenting a wrong team membership can cause considerable disturbance. Examples of such discrepant roles are individuals, who have unanticipated access to information (e.g. traitors or spies who carry team secrets to others or 'shills' who act as members of audience but work for the performing team). Other individuals may be present, but not performing (non-person, such as formerly servants or nowadays research observers). Also outsiders may prove to have unexpected information about the audience (such as consultants or colleagues).

Similar to the division of teams, the setting ideally consists of a front region, which is visible to the audience and where the performance takes place, the back region,

which should be invisible to the audience and where the performance is prepared, and the outside, from whence the performance should not be visible (Goffman, 1959, p. 106). The back region or back stage is meant as a private region of the performing team, where they can act out of character (Goffman, 1959, pp. 112-121). The access to the back region should thus be guarded. This seclusion of the back region from the audience or even the existence of a separate back region is not necessarily given. In the absence of a separate back region, the performers might relax and act out of character in the front region, if the audience is absent. Lack of such opportunities can lead to tension, if the performers find it difficult to sustain their front over a longer period without a break. If the backstage entrance is not sufficiently guided and a member of the audience enters the back region unexpectedly, the performance is likely to be disrupted as the backstage might not be in-line with the presentation in the front region (Goffman, 1959, pp. 112-121).

2.3 Disturbance and embarrassment

The participants in an interaction provide their partners with cues in order to create a particular impression. The impression should be coherent and in-line with the common expectations and produce desirable response. If this impression cannot be sustained throughout the performance, embarrassment may follow (Goffman, 1956). Embarrassment is often demonstrated by physical signs and may lead to further disturbance of the projection. Goffman (1959, pp. 208-212) names several incidents that can disturb a performance. These can be unmeant gestures or remarks that provide unintended cues, inopportune intrusions that jeopardise the role division among participating teams or unintentional mentioning of undesirable facts (faux pas). Furthermore, disturbing scenes may occur, such as disclosure of negative facts about a team by a team member, confrontation with audience, or unintended inclusion of outsiders.

The art of impression management is the art of preventing disturbances, thus sustaining a particular projection throughout the performance. As disrupted performance can be embarrassing for everyone, the effort to prevent dissonance is made by the performers, but also by the audience. Of course, some performances may be purposefully carried out to test and disturb the staged character (e.g. criminal

trials, examinations). To sustain the impressions, performers have to depend on "dramaturgical loyalty" (Goffman, 1959, p. 212) of team members to the team and its aims. The performers also have to posses "dramaturgical discipline" (Goffman, 1959, p. 216) and "dramaturgical circumspection" (Goffman, 1959, p. 218) to stage a successful performance. The audience, on the other hand, can prevent conflicts by avoiding the back stage region, refraining from contradicting the performers, and pretending not to see flaws in the performance (Goffman, 1959, p. 229-233). Occasionally, the performance may become aware of these tactful practices of the audience and have to be tactful in return, by quickly taking clues to modify the performance and hiding their awareness of the audience's awareness (Goffman, 1959, p. 234).

3 Online Impression Management

Erving Goffman uses a dramaturgical analogy to foster a better understanding of interaction between individuals (Kenneth, 2011, p. 73). Based on this metaphor, he describes principles for successful performances and problems connected to disrupted performances. Nowadays, interaction increasingly takes place without face-to-face contact, often in the form of asynchronous communication. This section examines the application of Goffman's impression management theory to self-presentation on the Internet.

Before applying Goffman's impression management to the virtual environment, it has to be discussed, whether this would be appropriate. After all, Goffman (1959, p. 15) defines performance as activity occurring during a face-to-face encounter. When describing the dramaturgy metaphor, Goffman often points to the role of non-verbal cues. The smoothness of interaction is also clearly dependant on immediate feedback exchanged between the audience and the performers. Goffman particularly stresses the turn-taking aspect of talk (Goffman, 1964, pp. 135-136). All this is limited or not possible at all on the Internet. On the other hand, Goffman recognises the existence of other media (such as telephone, traditional mail, television, or radio - electronic media came to be used by public only much later), and acknowledges that managing one's performance is just as important on the telephone or in mail as in face-to-face

encounters (Goffman, 1983a, p. 51). But he also points out, that mail and telephone represent simplifications of face-to-face encounters (Goffman, 1983b, p. 2). Hence, while the application of Goffman's theory to computer mediated communication is possible, it has to be borne in mind, that there will be limitations.

3.1 Performance

When applying Goffman's theory to self-presentation on the Internet, it corresponds to the idea of a digital identity (Turkle, 1995). The 'digital self' is shaped through communication and interaction in the virtual environment of the Internet (Wessels, 2009; Miller, 1995). How much it corresponds to an 'offline self' depends on the needs of the individual who manages it (Wynn & Katz, 1997). The Internet users are known for a creative use of the tools available to them for online self-presentation (e.g. emoticons, text-images). Furthermore, due to the dynamic development, the computer-mediated interaction has been greatly enriched. Thus, it would appear that the Internet simply provides new settings for further performances.

A setting can be defined in the physical world as the place, where the performance takes place (see also further discussion in Section 3.2). Applying this to the Internet, it is a virtual space of the performance, such as a web page, blog, or a platform (Winter, Saunders, & Hart, 2003). The features of a virtual setting - just as of a physical one - can be limiting or empowering. In a virtual setting, however, these features are likely to have a stronger influence on the performance, as they define the possibilities of the performers to shape their front (e.g. whether or not the users can upload an avatar or what data they are allowed to enter). The staging of one's front thus requires knowledge of the features and skill in using them (Feaster, 2010). While the features may limit the performers' options in creating a suitable appearance and acting in a necessary manners, this may also be of advantage. In some situations, the performers can prefer to use communication channels with lesser richness to provide the audience with fewer potentially compromising cues (e.g. gestures, physical appearance) (O'Sullivan, 2000).

Some applications on the Internet may make it difficult to define performance in terms of time. Goffman (1959, p. 15) talks of performances as lasting throughout

an interaction. In the physical world, this can be described as the time from when audience and performers meet to the time when they separate. In the virtual world, the encounter can be difficult to detect (e.g. web page view) and it may be difficult to pin-point the beginning and the end. The ability to define performances in terms of encounter greatly depends on the features of the setting.

Staging a coherent performance is just as important in the virtual world as in the physical. Lack of necessary skills can be a serious hindrance, particularly if the audience is sensitive to recognising rich performances from simple ones (M. Williams, 2007). The limited richness restricts the amount of information that the audience receives (compare Daft & Lengel, 1984). Hence it may be necessary to use techniques of dramaturgic realisation in order to bring into the attention of the audience issues that might otherwise be undiscovered (e.g. explicitly writing into a chat window that a customer has just come in for consultation to show that the conversation cannot be continued at the moment). The limited richness will make it easier to create a mystified image of ones doings or to make believe that the performance corresponds to an ideal expectation. Mystification and idealisation profit by lack of cues, as these might disturb the projected image. Lack of cues may also make it easier to misrepresent information (Taylor, 1999).

3.2 Roles and setting

In a face-to-face interaction, the setting is defined as the place of physical presence of the performers. The front region is defined as the place where the performers can be seen performing by the audience. The back region - if it exists - is defined as a part of the setting, where the performance is prepared and which is not meant to be seen by the audience (Goffman, 1959, pp. 22-25). Thus there are two important factors: the presence of the performers and the visibility to the audience. A further factor may be the invisibility to outsiders (i.e. individuals other than the intended audience). In the virtual world, the presence of the performers (or indeed audience) is only virtual. While some applications can monitor and announce the virtual presence (e.g. who-is-online functions in social networking systems), usually the virtual presence has to be actively established by the performers, usually by creating content (e.g. writing a blog post, creating a web page) (M. Williams, 2007). By taking such action, the

performers make themselves visible to the audience.

The main problem does not appear to be establishing presence or visibility, but limiting access, i.e. defining who the audience is and who the outsiders are (Pearson, 2009). Many applications allow users to impose some access limitations. While this may help to exclude unwanted visitors, it may not be enough to fine tune the access rules for the multitude of audience types that are acceptable. Very often, all audiences will be treated with the same front or else with a different front according to a rough grouping (e.g. assigning contacts in an social network to groups with varying access to the profile).

The limited ability to present a specific front to a specific audience will potentially make it difficult to maintain a virtual-team back region. At the same time, a virtual performance might have an offline back stage (e.g. offline meeting to determine a common blogging strategy). Many platforms will, however, permit, that users make contact away from the visible front region (e.g. private message feature in a forum). Or spaces may be provided, that will only become public upon permission (e.g. draft status in blogs, accessible to other authors). Furthermore, it is important to make a distinction between a back region and a private performance. A back region is connected to a setting of a particular performance, where the performance is prepared. Performers might, however, engage in private performances, that are meant for a specific audience (often consisting of closer friends). A private performance does not necessarily have to take place in a back-region (compare Pearson, 2009).

3.3 Disturbance and embarrassment

Just as in face-to-face performances, incidents can occur in the virtual world that disturb the projection that the performers are trying to sustain. Due to the limited richness of some channels, more subtle messages (e.g. sarcastic remarks, jokes) may be more difficult to communicate, appearing as unmeant gestures. Leakage of information through insufficiently closed access ways can lead to disclosure of unwanted facts. Individuals may also enter spaces, where they are not welcome. In all, the risks are similar to offline performances (compare Section 2.3). The practice of the art of impression management to avoid such dangers demands appropriate

skills and creativity in the utilisation of available features (Feaster, 2010).

An important factor in managing the performance and preventing disturbances is embarrassment. Embarrassment is a perception of discomfort in a situation, which according to Goffman (1956) marks the occurrence of disruptions in a performance. In order to feel embarrassment, the participants must be aware of the disruption. Embarrassment may be also detected in other by reading non-verbal cues (e.g. blushing, incoherent speech), thus noting the existence of a disruption (Goffman, 1956). In the virtual world, while embarrassment can be felt, it is not easily noticed in others, unless they choose to make it explicit. This may be of advantage, as fear of embarrassment might otherwise prevent individuals from taking part in a performance (O'Sullivan, 2000). Individuals may even choose to employ a channel with limited richness in order to avoid embarrassment (Feaster, 2010). At the same time, embarrassment is a part of natural social order, aiding individual to adapt their performance (Goffman, 1956). When the embarrassment feedback is missing, performers may fail to recognise the disturbances in their performance, which can hinder them in achieving their aims (Miller, 1995; Miller & Arnold, 2003).

To summarise, this section has discussed the application of Goffman's impression management to virtual environment. Based on this discussion, there are six main areas that deserve consideration when applying impression management to online self-presentation: (1) the selection and design of a setting, (2) the presentation of a front, (3) the definition of regions, (4) the identification of teams, (5) access to feedback concerning disturbances, and (6) the application of the arts of impression management. In the following, these areas will be studied with regard to the online presentation of scientists as a specific user group. First, an overview will be provided about the self-presentation of scientists in the internet and their audience (see Section 4). The specific areas will then be considered with the aim of deriving concrete suggestions for self-presentation practices of this user group (see Section 5).

4 Scientists Online

Many scientists take advantage of the Internet to present themselves and their work (Hess, 2002). They can use different platforms to do so: the web pages of their affiliated institutions, individually created homepages, profiles on social networking services, blogs, microblogs, wikis, or profile page on platforms for management of resources like citations, slides, or documents. The usage of such platforms and their content have been the object of research with regard to both Internet users in general (e.g. Herring, Scheidt, Bonus, & Wright, 2004; Miller & Arnold, 2003; Java, Song, Finin, & Tseng, 2007) and scientists in particular (e.g. Herwig, Kittenberger, Nentwich, & Schmirmund, 2009; Ferguson, Clough, & Hosein, 2010; Möslein, Bullinger, & Söldner, 2009). This article focuses on the use of traditional web pages, social networking services, blogs, and microblogs, with some consideration of other profiling opportunities. This section presents a review of existing literature about the use of different platforms for profiling, focusing in particular on existing typologies regarding the published content and the platform usage. For this purpose, the platforms are defined and described and the existing typologies are then summarised in a tabular overview (see Table 1).

HTML-Pages. In many academic institutions, scientists can present themselves on institutional pages. In the past these were manually coded HTML pages. Nowadays, institutions can use web-content-management systems, which offer user-friendly editors. Similarly, scientists can create their own web pages online, either by writing the HTML code themselves or taking advantage of pre-formatted templates and editors. HTML pages theoretically offer high flexibility for content publishing. The published content can be text-based, but other media e.g. audio or video can also be linked or embedded. Nevertheless, the published content can be limited by internal and external factors. The internal factors include the authors' media skills. External factors can include technical restrictions or external policies (e.g. institutional corporate design). Personal home pages have been researched particularly with regard to digital identity (see literature review in Döring, 2006). Along these lines, Hawisher and Sullivan (1999) and Hess (2002) present in-depth studies on self-presentation of faculty members, focusing mainly on visual elements. Dillon and Gushrowski (2000) explore which content elements are included on personal

web pages, but do not offer an abstraction. Simple typologies describing the content of personal home pages are suggested by Miller (1995) and Saint-Georges (1998).

SNS. Social Networking Services (SNS) offer their users the opportunity to create personal profiles and connect to other users (Boyd & Ellison, 2008). Their content is typically semi-structured. Imposing a structure on the provided information makes the profiles better searchable, but at the same time it limits the contents. While some platforms focus on professional networking regardless of profession, others target academic audience (Nentwich, 2010). Increasingly, SNS also support the creation of communities of interests among their members. Although research has been carried out regarding SNS both for users in general (see overview by Boyd & Ellison, 2008) as well as for scientists (Möslein et al., 2009), no content typologies have been developed. One reason for this can be the apparently straightforward structure of SNS profiles.

Blogs. Weblogs or blogs for short are web pages with a list of dated entries that are typically displayed in a reverse chronological order (Alcock, 2003; Herring et al., 2004; A. Williams, 2008). Most blogs combine text, images, and links to other blogs and web pages and allow the readers to comment blog postings. Other typical features of blogs are an individual ownership, a hyperlinked post structure, and an archival of postings (Sim & Hew, 2010). Due to the personal ownership and commentary opportunities, blogs thus create a feeling of more or less direct communication with the audience (Keng & Ting, 2009). Besides regular publication of content in posts, blogs can be also enriched with further static pages and embedded applications. As such, blogs can be used to build complex platforms containing large amounts of data of different types. The content and the use of blogs have been researched both with regard to users in general as well as to scientists. A number of authors discuss the role of blogs in science, especially in scholarly publishing (Wang, Jiang, & Ma, 2010; Hendricks, 2010; Kjellberg, 2010). Other authors discuss the role of blogs in identity management (Ferguson et al., 2010; Ewins, 2005; Luzón, 2009). Typologies on blog content and blog use are offered by Blood (2002), Herring, Scheidt, Wright, and Bonus (2005) for blog users in general and by Ferguson et al. (2010), Halavais (2006), and Nentwich (2010) for scientists.

Microblogs. Microblogs are platforms where users can post short messages (e.g.

140 characters on Twitter). Similar to blogs, messages are posted in reverse chronological order (Boyd, Golder, & Lotan, 2010; Honeycutt & Herring, 2009). Microblogs allow the users to create simple profile pages, however, the information they can enter is strongly limited. Microblog users can sign up to follow other users' message time-lines, thus creating implicit frameworks (Java et al., 2007). Popular microblogging platforms are Twitter and FriendFeed (which further acts as an aggregator of content created elsewhere) (Herwig et al., 2009). Typologies on the content of microblog messages are offered by Honeycutt and Herring (2009), Java et al. (2007), and Mischaud (2007) for users in general and by Herwig et al. (2009) for microblogging scientist.

Other. Increasingly, other platforms also offer the opportunity to create a personal profile or connect to other users. These features have been added by platforms originally focusing on management of resources, like citations (e.g. Mendeley, CiteULike) or presentations (e.g. SlideShare) (Farooq, Ganoe, Carroll, & Giles, 2007). The functionality offered on these platforms closely resembles SNS.

The contents and the use of these platforms have been studied previously. Table 1 shows a summary of existing research.

Table 1: Literature overview

Reference	Platform	Findings
Miller, 1995	HTML pages (general)	Homepage themes: (i) the own person, (ii) the own person as as an organization member, (iii) the own family, (iv) the own interests, and (v) the own competencies
Saint-Georges, 1998	HTML pages (general)	Elements of a personal homepage: (i) personal information, and/or (ii) current activities, and/or (iii) professional experience and/or (iv) interests
Blood, 2002	Blogs (general)	Blog types: (i) filters, (ii) personal journals, and (iii) notebooks
Herring et al., 2005	Blogs (general)	Blog types: (i) filters, (ii) personal journals, and (iii) k-logs

Table 1: Literature overview

Reference	Platform	Findings
Ferguson et al., 2010	Blogs (scientists)	Types of blog posts: (i) community and collaboration, (ii) reflection, (iii) research environment, (iv) emotive posts, (v) memos, and (vi) blogging-related posts
Halavais, 2006	Blogs (scientists)	Blog types: (i) notebooks, (ii) coffee houses, and (iii) opinion pages
Nentwich, 2010	Blogs (scientists)	Blog uses: (i) commentary of current events, (ii) discussion forum, (iii) external scientific communication, (iv) tool for collecting information, (v) learning journal, (vi) establishment of personal presence, and (vii) diary
Herwig et al., 2009	Microblogs (scientists)	Contents of scientists messages: (i) advertising events, (ii) advertising publications or talks, (iii) current readings, (iv) questions, and (v) coordination of activities
Honeycutt & Herring, 2009	Microblogs (general)	Content categories: (i) comments or questions on the addressee, (ii) information announcement/advertisement, (iii) exhorts, (iv) information for others, (v) information for self, (vi) metacommentaries, (vii) media use reports and reflections, (viii) opinions, (ix) others experiences, (x) own experiences, (xi) information requests, and (xii) other.
Java et al., 2007	Microblogs (general)	User intentions: (i) daily chatter, (ii) conversations, (iii) sharing information/URLs, and (iv) reporting news
Mischaud, 2007	Microblogs	Message themes:

Table 1: Literature overview

Reference	Platform	Findings
	(general)	(i) personal, (ii) family/friends, (iii) information and news, (iv) work, (v) small talk, (vi) technology, (vii) activity, and (viii) miscellaneous

In comparison to the discussed studies, Bukvova (2011b, 2012) uses a holistic understanding of the term 'profile'. The above authors see a profile as a space on a particular platform created by a particular person. Bukvova (2011b, 2012) points out, that scientists - or indeed all Internet users - can use the variety of available platforms to create several presentations. In order to evaluate personal Internet presence, the sum of the existing presentations must be viewed. For this purpose, Bukvova (2011b) defines a framework, which recognises three profiling levels: (A) content units, describing 'chunks' of related information created for presentation purposes by a scientist; (B) profile instances, composed of content units created on a single platform; and (C) profile networks, composed of profile units belonging to one scientist, forming a hypertextual network. The multi-platform approach means, that a highly heterogeneous collection of profile instances of different type needs to be taken into account. Bukvova (2012) uses the introduced analytical framework to derive holistic profiling patterns that are applicable regardless of platform type (see 1).

An online profile can be of interest to a broad audience. In case of scientists, potential viewers may range from peers and students to interested public. The heterogeneity further increases with a multi-platform approach (Bukvova, 2011b). Only a limited number of authors consider the audience of Internet profiles. This can be due to difficulties in identifying actual viewers (Hine, 2001). For this reason, researchers have focused on platforms, where the audience can demonstrate its presence through direct interaction: blogs, microblogs, and SNS. For blogs, Nardi, Schiano, and Gumbrecht (2004) discuss the interaction between bloggers and their audience. They stress the social function of blogs, but mainly from the point of view of blog-writers. Similarly, Ferguson et al. (2010) study changes of blogging behaviour of academics over time, implying that changed role and potential audience influence the devel-

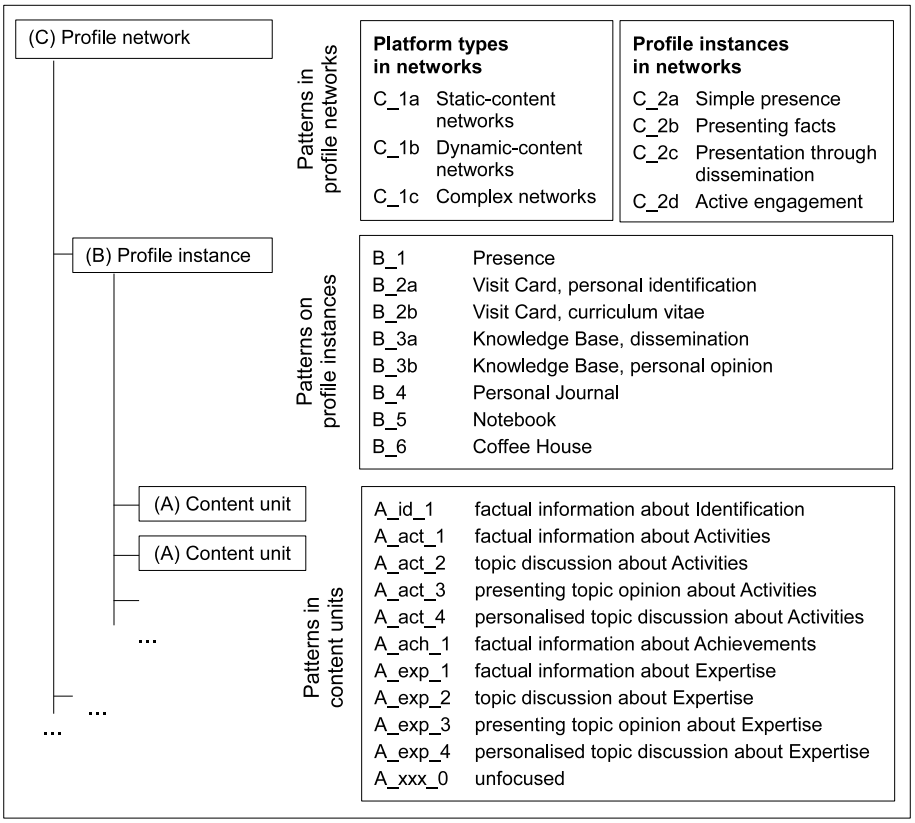

Figure 1: Analytical framework

opment of blogging practices (compare also Halavais, 2006; Nentwich, 2010). The aspect of communication with the audience has been also researched for microblogs, focusing on interaction between microblog users (Honeycutt & Herring, 2009; Boyd et al., 2010). Audience-related research concerning SNS has focused on the reception of produced content by audience (Weisbuch, Ivcevic, & Ambady, 2009) and its potential influence on the created content (Pearson, 2009). Besides the platform-focused studies, Bukvova (2011b) presents a multi-platform study focusing on search patterns of scientists searching the Internet for information about their peers.

5 Managing an Online Presentation

This section presents principles of the management of online profiles belonging to scientists. The previous sections outlined theoretical foundation of self-presentation

in the Internet, depicting it as a dramatic performance (see Sections 2 and 3). Using findings from existing studies regarding the creation of online content on various platforms, in particular concerning scientists professional profiles (see Section 4), it is possible to derive concrete principles that can support decision-making in practice. Figure 2 shows a decision framework for the management of scientists' online profiles. In the following, the framework and the identified principles will be discussed in detail.

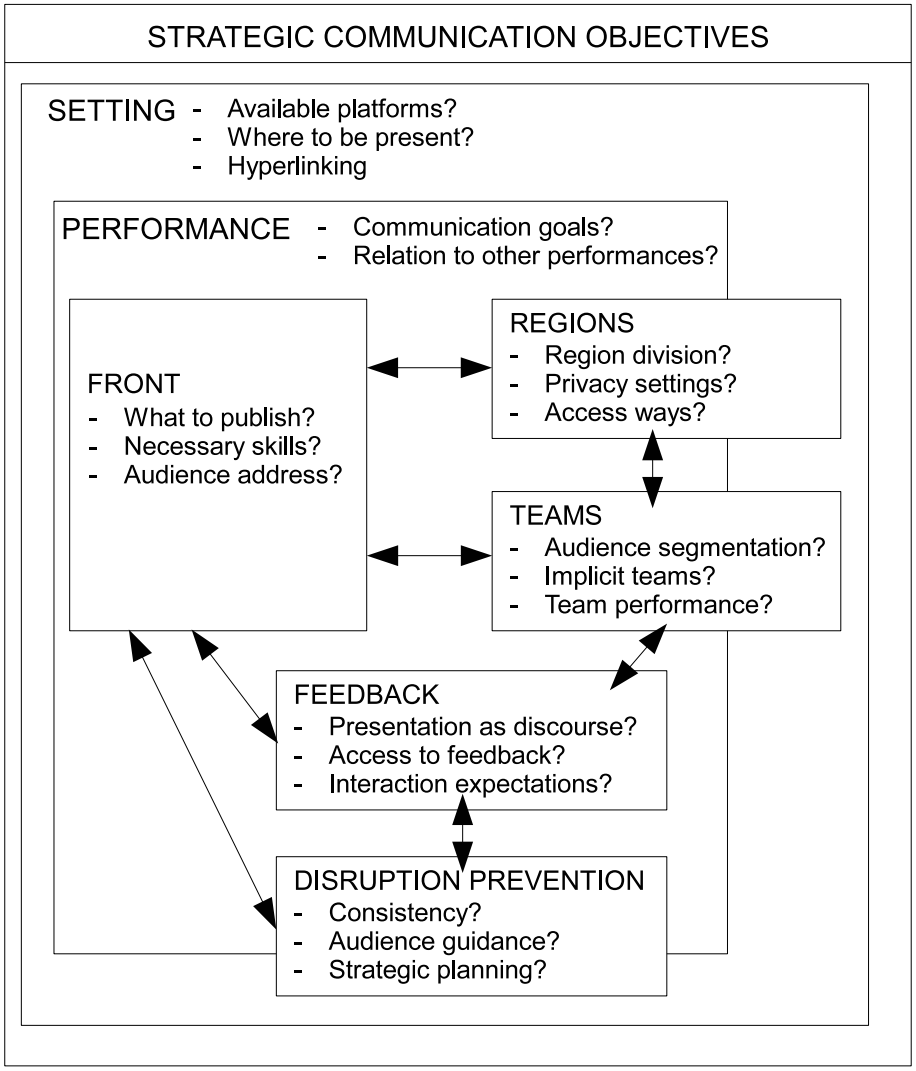

Figure 2: Factors to consider in online-profile management

The application of the framework begins with the explication of the scientists' *strategic communication objectives*. When these have been determined, the scientists can go on to plan new or evaluate existing performances on the Internet. Each per-

formance is placed in a particular *setting*, which determines the design possibilities (Schmidt, 2007). Within a selected setting, the scientists can create multiple performances, each with its own *front*. When designing and managing the performances, the composition of available *regions* and the interaction of *teams* of participants has to be taken into account. The impression management theory is based on the interaction between performers and the audience. When managing an online presentation, it is necessary to consider the access to audience *feedback*, which in turn can help to *prevent disturbances* of the performed front.

5.1 Strategic communication objective

The aim of the decision framework (see Figure 2), is to point out issues that need to be considered by scientists designing their Internet presence. Of course, it is possible to design an online presence without the help of the framework. Most scientists (probably most Internet users) develop their online presence in an ad-hoc manner, adding new profile instances and new content depending on momentary goals (compare Schmidt, 2007). The professional Internet presence has considerable potential for scientists, in particular the management of existing ties to other scientists and the creation of new connections (Bukvova, 2011a). However, given the complexity of the Internet and heterogeneous audience of scientists profiles, a strategic approach is necessary in order to unlock the full potential of online presence (Bukvova, 2011a). Furthermore, creation and maintenance of Internet profiles can require a considerable time and effort, which are best invested strategically.

Therefore, the application of the framework is founded on the awareness of the scientist of his or her strategic communication goals. Scientists can have the Internet for a variety of reasons such as networking with other scientists, publication of content for peers or interested public, presentation and discussion of own opinions, establishment of personal presence in the scientific community or sharing of diaries and information collections (Nentwich, 2010). The reasons can be various and they are likely to change over time (Ferguson et al., 2010). When creating new online presence or evaluating existing profiles, scientists must begin by explicating their overall objectives. While each performance will have its own communication goal, it is important to have a strategic foundation in order to align them into a whole. Of

course, strategic communication objectives are a holistic construct, that covers also communication channels other than the Internet (compare Haythornthwaite, 2002). Based on these objectives, a scientist can well decide not to have an online presence. Given the aims of this article, the focus in the following will be on scientists, who choose to present themselves on the Internet.

5.2 Setting

The setting is the platform, where a performance takes place. If a scientists chooses to have a single online profile, then its placement on a platform determines its setting. Complexity rises, if one scientist has several profiles placed on different platforms. In this case, the referral to the set strategic communication objectives is of particular importance. Without strategic alignment, the selected settings can form an incoherent patchwork.

What platforms are available online? There are many platforms available, where scientists can choose to set their performance. This article focuses on HTML websites, SNS, blogs, and microblogs, also mentioning resource-management platforms. A detailed discussion of available platforms is presented in Appendix B. There are further platforms available (e.g. wikis). Furthermore, given some creativity, scientists can use practically any platform as a presentation setting, provided that they are accessible to the target audience. The freedom of choice may be limited by expectations resulting from the scientists' position or their other presentations. Increasingly, higher education institutions attempt to create a coherent online presence, often expecting their faculty to create a personal profile on the institutional pages (Hess, 2002). Some groups in the audience (e.g. students) might also expect to find information about a scientists within the Internet pages of its institution. Others (e.g. peers) may expect the scientist to be present on the same platforms as they are, such as a particular SNS (compare Bukvova, 2011a). The selection of a particular platform as a setting can also create expectations about the existence of other profiles (e.g. a blogging scientist might be expected to possess other online profiles as well, if the audience connects blogging to high level of online engagement).

On which platform should one be present? Given the considerable variety of

available platforms, suitable settings ought to be chosen purposefully and in correspondence to the strategic communication objectives. The choice of a setting involves two decisions: a decision regarding the creation of a profile on a particular platforms and decision regarding the depth of engagement. When judging the suitability of a platform, the scientists have to consider the performances that they wish to place here. The selected setting will have influence on the available design and interaction with the audience (Schmidt, 2007). After choosing suitable settings, the scientists can still regulate their presence by the level of engagement, i.e. the amount of content they will publish on a particular platform. For example scientists, who are expected to have an institutional profile can choose to provide only basic information, while creating a more elaborate profile on a platform that suits their objectives better (Hess, 2002).

Should the selected platforms be connected? A single platform, with a scientist's profile instance can be considered a setting for the scientists performances. A scientist can, however, create profile instances on a number of platforms. Although each platform presents a separate setting, they are also all placed in the virtual world and as a sum form the scientists online presence. Furthermore, the scientist can place hyperlinks that connect some or all profile instances, forming a profile network. Hence, the setting of a particular performance can encompass several profile instance. Attention should thus be paid to the creation of hypertextual profile networks, aligning them to the goals of individual performances and on a higher level to the strategic goals.

5.3 Performance

An online performance has been described as an interaction event, taking place in the virtual world. Unlike in a face-to-face interaction, the begin and the end of an online performance is not easy to identify. The audience can also be difficult to determine (Hine, 2001). Thus, it is necessary to consider online performances from the point of view of the performing scientist. In the following, performances on online profiles are considered as profiling episodes. A profiling episode contains all content created in relation to particular performance (compare Bukvova, 2012; Schmidt, 2007). The assignment of content to a particular performance is a subjective act depending on

the scientist's understanding of the performance.

What are the communication goals of each performance? While strategic communication goals are necessary for the management of the online presence, each performance is guided by its own communication goals (Schmidt, 2007; Goffman, 1959). The communication goals will have major influence on the design of the scientist's front, the segmentations of regions and the division of teams. In order to achieve his or her goals, a scientist must stage a coherent performance, ideally also considering the feedback from the audience and possible co-performers. On the Internet, performances staged on different profiles can easily intersect, without the scientist's intention or even knowledge (e.g. a student finds besides the official institutional profile also a private food blog). Hence it is important to view the communication goals of one performance in context of other performances and the strategic objectives.

How are the performances related? Different performances can have different, even contradicting communication goals. Due to the high level of connectivity, one audience can be easily exposed to different performances, leading to potential disruptions. If a scientist possesses multiple profiles or gives multiple performances in one setting, he or she has to align the performances to present a coherent picture to a given audience. This does not necessarily mean, that an audience has to be presented only with one type of content (e.g. only contact data). The scientist may well choose to expose a particular audience to different performances (e.g. some scientists like to include private information, such as family photos on their profiles Hess, 2002). However, the more performances are available to an audience, the more information will this audience possess about the scientist. Contradicting information from one performance will disturb another one. The scientist will thus be limited in his or her choices of fronts (Goffman, 1963; Kenneth, 2011). Strategic alignment of different performances with one another and the communication objectives will be necessary in order to maintain a coherent performance as the complexity of the online presence increases.

5.4 Front

A front is the appearance and the manner that the performer employs throughout the performance (Goffman, 1959). In the internet, this is typically done through active content creation (compare M. Williams, 2007). Each performance has its own front, but the same front can be used for multiple performances. As noted in Section 5.3, the more contact an audience has with a particular front, the less likely it will accept a different front without feeling a disruption in the performance.

What content to publish? The content published by a scientist on his or her profiles can be clustered into publishing episodes according to its connection to a particular performance (Bukvova, 2012; Schmidt, 2007). Just as a front can be created in several publishing episodes, so a publishing episode can belong to different fronts. For example in a scientist's blog, the content 'about-me' page can be seen as a single publishing episode. Depending on the content of the blog, each blogpost may form a different performance (e.g. a scientist combining posts about recent research activities with posts about recent events in his or her home town). In both cases, the audience can supplement reading of a blog post with viewing the about-me page. This page must thus support two different fronts. Moreover, if the scientist wishes the audience to read both of the different post types, the used front must be coherent across the performances.

Theoretically, the scientists are free to publish any content they wish. Some restrictions may be imposed by the selected setting regarding the type and the amount of content (Bukvova, 2012). Scientists' professional profiles typically contain content related to the person of the scientist (e.g. name, photo, contact data), his or her activities (e.g. current research projects, courses taught), achievements (previous, successfully finished activities, e.g. previous positions, level of education), and expertise (Bukvova, 2011b). Some scientists also choose to publish, private or off-topic information (e.g. information about family, hobbies) (compare also Hansen, Pfitzmann, & Steinbrecher, 2008 and Section 4). Scientists can create a considerable variety of performances by varying the depth of provided facts in a particular category, level of personalisation, and amount of interaction in a particular category. While the decision about content publication depends on what the scientist needs

to uphold on a particular front, it can be useful to consider what categories would be relevant to a particular front and how should these be designed.

What (media) skills are necessary for the performance? What content can be published on a platform is influenced by the platform's features and also by the scientist's ability to use them (Feaster, 2010). With a growing complexity of the communication objectives and goals and hence with a more elaborate Internet presence, greater demands will be made on the media skills of the profile owner. This will include the knowledge of available features, the ability to use these, and creativity to apply them in order to create the desired presentation. Scientists who lack these skill have to accept a simpler presentation and may have to adjust their communication goals or event their communication strategy (Papacharissi, 2002).

How will the audience be addressed? It is often noted, that communication in the Internet limits the interaction possibilities, in particular due to the limited richness of available channels (Daft & Lengel, 1984). Feaster (2010) and O'Sullivan (2000) however point out, that interaction is possible, but it is under the full control of the participants. The level of interaction with audience is managed by the scientist. Through selection of appropriate setting, suitable front, and management of regions and participating teams, the scientist decides how active his or her interaction with the audience will be. Different levels of interaction intensity can be used: no active communication (e.g. simply publishing own notes), conversational interaction (e.g. addressing audience in text but providing no answer possibilities), direct interaction (e.g. application to audience to comment or participate in a survey), and active discourse (e.g. replying to comments) (Bukvova, 2011b). The manner of communication with the audience and the communication goals regarding active interaction have to match the design of interaction possibilities (e.g. if audience is directly applied to, it ought to have an opportunity of replying; if the scientist wishes no audience feedback, comment possibilities should be turned off).

5.5 Regions

The most important region in online impression management is the front region that is accessible by the audience. The setting may also provide a back region,

an administrative area, where the content can be drafted and stored and which is typically inaccessible to the audience. The back region can also include interaction possibilities for team performances. Finally, there is the outside region, which is meant for individuals who do not witness the performance. The need to design and maintain the separate regions depends on the communication objectives and goals and the division of teams.

What regions are necessary/available? Many platforms now offer sophisticated possibilities to separate the front region from outside and create a back region (see below). Furthermore, the front region can be further subdivided in order to allow separate performances for different audience groups. The effort necessary for the management of multiple regions grows with the required granularity. Also, access to designated regions may require effort from the audience (e.g. entering a password). The alignment with the communication objectives and goals is therefore important, in order to prevent unnecessary time investment. An important decision is the separation from the front region from the outside region. While some scientists choose not not separate these (Nardi et al., 2004), they are often not aware of or not comfortable with the implications (Bukvova, 2011b). In face-to-face encounters, individuals often rely on region divisions implied by accepted rules of conduct (e.g. not listening to conversation on the next table) (Goffman, 1959, p. 230). Similarly, some profile owners rely on similar respect of 'implicit' regions and audiences (Bakardjieva & Feenberg, 2000). From the point of view of impression management, such confidence appears risky. A scientist should thus make clear decision concerning the accessibility of his or her content by general public and then use appropriate settings to implement it.

What privacy settings are necessary/available? Depending on the platform type and concrete application (see Appendix B), scientists have settings at hand, that can be used to enforce region boundaries. Lack of such settings needs to be taken into account, particularly if regional division is closely connected to communication objectives and goals. Available privacy settings vary along a spectrum from fully public access (open to all Internet users) and fully private access (visible only to the scientist). Between these two extremes, it is possible to restrict the access of audiences, depending on their characteristics (e.g. platforms users, contacts, particular group of contacts, knowledge of a password). The awareness of available

privacy settings and their use is a crucial media skill, that can help prevent potential disruptions (Acquisti & Gross, 2006).

How can the performance be accessed? There are different ways for audience to access scientists' profiles (Bukvova, 2011a). This may be of advantage, making a public profile potentially visible to a large audience. On the other hand, it can also make a regional division difficult. A particular problem may be access from search engines, as this can easily disorient the audience. The audience may arrive at a content unit (e.g. a blog post) without viewing other content units meant as a part of coherent performance (e.g. an 'about' page). Furthermore, the audience may not be aware of the structure of the profile, and thus find it difficult to collect further information (Mandl, 2007). Search engines can also break through some intended regional divisions, such us unlisted URLs (Nardi et al., 2004). Direct, search-engine based access can cause particular difficulties in case of implicit regional boundaries, that have not been enforced technically (e.g. a blog content is meant only for colleagues, but is technically accessible to anyone). For this reason, important region boundaries need to be ensured by appropriate settings. The scientists can also use hyperlinks to guide the audience along particular access ways. Hyperlinks can thus play an important role in aligning the overall performance.

5.6 Teams

Theoretically, content created by scientists on their profiles is accessible to a world-wide audience (Hine, 2001). The individuals of the audience will have various relationships to the profile-owning scientist and the content itself. Depending on these relationships, it is possible, that the scientist might like to present them with specific performances. In order to manage the presented performances, it is useful to group them into teams with common characteristics.

What segments/teams are present in the audience? The creation of different regions can be used to present different participants in an interaction with different performances (Goffman, 1959, pp. 106 et seq.). The participants can be grouped into teams with similar relationship to the performance. The teams can vary in size (from zero upwards) and their relationship can change throughout the performance or set

of performances. Although the membership in a team is not definitive, unanticipated team changes can cause disruptions (e.g. if an unknown reader suddenly accesses copy-right materials meant for a particular group of students). The segmentation is carried out based on the assumptions of the scientist about potential audience of his or her profile(s) (Goffman, 1959, p. 3). The assumptions can be theoretical or experiential or inferred with the help of tools for monitoring of website traffic (Hine, 2001). In most cases, the scientist cannot predict exactly who will visit the setting. The expected audience can be then grouped into teams according to their information needs and expectations. Each group can be provided with own front region and receive a tailored performance. It is necessary to decide, how much the performances will differ and especially, what would be the consequence of one team seeing the wrong performance. If one performance would be simply irrelevant to other teams (e.g. if interested public members find a specialised publication that they cannot understand), the audience can be provided with guidance that will rely on implicit boundaries. If witnessing the wrong performance would be disruptive to the overall performance for this team (e.g. potential investor finding photos of a Christmas party at the institution), then these boundaries have to be enforced by privacy settings. The decision about necessity and rigour of boundaries is subjective and related to the scientists personal understanding of his or her situation and relationship to the different teams.

Are there implicit subgroups? As pointed out, providing different audiences with separate regions requires considerable effort. Likewise, it is often impossible to predict exactly what audience will visit what settings. Furthermore, the expected audience team can be so large, that it might be impossible to provide all members with means of entering the correct region. Therefore, the scientist can decide, that the disruption caused by a team-member entering the wrong performance is acceptable and provide a single front for several teams (e.g. an institutional web site will present the same personal and contact data to students, peers, potential partners etc.). Additionally, the scientist can choose to create a region for an implicit team in the audience, and provide guidance instead of actual boundaries. Typical example is grouping of information by audience groups (e.g. for students, researchers, investors). Hyperlinks can also be used to guide implicit audience teams through or even across settings. The aim of implying, that a certain performance is meant for a particular group must be to aid the audience to find the performance that it

wishes to see. Such measures cannot stop the team members to access, intentionally or unintentionally, also other regions. Thus they should not be used to keep teams away form unacceptable performances.

How to stage a team performance? While some teams will enter a setting to witness a performance, other might partake. There can be different levels of team membership, from active cooperation in a common setting (e.g. a blog belonging to several scientists), over shared interests on a coherent performance (e.g. colleagues wishing to present unified profiles on institutional web pages), to an implicit participation in a larger performance (e.g. scientists blogging in a similar area). Teaming up with others can help to create a coherent setting for own performances. It can also improve chances of attracting relevant audience. At the same time, it can lead to extra efforts (e.g. the need to put up hyperlinks of similar blogs and take part in reading and commenting post of other bloggers). Additionally, it can limit the options in creating own front. Working in a team can make it necessary to create a back region, which cannot be seen by the audience (e.g. administrative dashboard, private forum). The presentation of a common front will call on the team members to retain loyalty to the teams communication goals (Goffman, 1959, pp. 212-216).

5.7 Feedback

Interaction among the performers and the audience plays and important role in impression management (Goffman, 1959). As a result of the dynamic development of the Internet, many platforms offer features that support interaction (e.g. comment function, forum). At the same time, it can be of advantage to the scientist to limit the level of interaction and retain a full control over the communication channels (Feaster, 2010; O'Sullivan, 2000).

Is the presentation designed in discourse with the audience? The scientists' self-presentations on the Internet are created for an audience (Hine, 2001). The assumed information needs and expectations of the audience often directly influence the design of the setting and content presented as a front. As such, the presentation can be seen as a product of discourse between the audience and the performing scientist (Pearson, 2009). Depending on the communication objectives

and goals, the scientist may actively search for further input of the audience in order to create a suitable performance. Given the effort connected to the fine-tuning of the self-presentation, a scientist may choose to accept some level of disturbance (e.g. unhappiness about unavailable data, publishing an unpopular opinion). However, it is important, that such practice is chosen with deliberation and not through neglect. Because the Internet limits immediate, unintentional feedback, such as individuals are to used from face-to-face interactions, the scientist may not become aware of disruptions felt by his or her audience (Miller & Arnold, 2003; Miller, 1995). Attempting to anticipate potential disturbances and evaluating their consequence is thus necessary, highlighting the discoursive character of an online presentation.

How to access audience feedback? As noted, the access to audience is not always automatic. Usually, the scientist will have to use the features available in a particular setting to create feedback opportunities. On the other hand, it may also be necessary to control feedback channels. Feedback channels should be selected with deliberation, providing particular audience group with feedback rights and excluding others.

What interaction is expected? Besides providing feedback channels, the scientist must also consider, whether the intended audience will also use these. This will depend on the characteristics of a particular audience group. The scientist can also influence the feedback intensity, by projecting his or her expectations regarding audience interaction into the particular performance. The availability of feedback channel already acts as a sign, that the scientist is interested in interacting with the audience. Further signs can be placed into the content creating the front and determining the performance. This will include gestures such as posting contact wishes (e.g. in the 'looking-for' section of some SNS) or addressing the audience. Active reaction to feedback will also be encouraging. If the scientist, however, does not wish to interact with the audience, the provision of feedback channels and conversational gestures could provide the audience with a wrong impression. Wrong expectations on the side of the audience regarding the scientists interest in interaction could disrupt the performance.

5.8 Disruption prevention

According to Goffman (1959, pp. 208 et seq.), a disruption in a presentation occurs, when the audience considers the performance inconsistent or unsatisfactory. To prevent disruptions, Goffman (1959, pp. 208-237) suggests that the performers should practice dramaturgical loyalty, discipline, and circumspection. In face-to-face interactions, the audience will support these efforts to guard itself from embarrassment.

Is the presentation consistent? In the virtual world, just as in a face-to-face encounter, the audience needs to be presented with a consistent performance. This is achieved by designing the setting and its regions according to the communication objectives and goals and creating a suitable front. While the previous sections focused on the single elements, a consistent performance requires a consideration of their interplay and the presentation as a whole.

Is the audience provided with necessary guidance? The audience in the virtual world has greater freedom with regard to access to different performances (Miller & Arnold, 2003). This can also lead to a lack of orientation (Mandl, 2007), as it may be confronted with partial performances, access different performances of the same scientist, or access performances not meant for them. This can negatively impact their protective mechanisms (Goffman, 1959, pp. 229-236). To support the audience and to ensure smooth performance, the scientist should consider actively guiding the audience through performances. The hypertext foundation of the Internet is suitable for this, as it allows non-linear connections through content units, leading the audience to relevant content (e.g. explanations, about-me page) or suitable performances (e.g. personal homepage, blog addressed to general public). A deliberate contemplation of potential audience and its segmentation is a necessary foundation for such guidance.

How does the performance relate to the strategic communication objectives? The management of online presence is a complex issues, especially for scientists who maintain presence in multiple settings. Due to the high level of connectivity of the Internet and the broadness of the audience, considerable effort needs to be invested in order to prevent performance disturbances. Hence, the online im-

pression management should be considered from the point of view of a strategic activity.

6 Conclusions

This article is founded on the understanding of online self-presentation as a part of an overall professional presentation of the scientists that requires a strategic approach. The Internet offers scientists an additional instrument for self-presentation (Bukvova, 2011a). While still limited in its richness, the strength of the Internet as a communication channel is its variability: it can be used to reach a broad, heterogeneous audience, employed for variety of purposes, and adjusted for personal needs (Döring, 2006). To harness its potential, however, deliberation and adequate skills are necessary. Self-presentation in everyday encounters is a complex matter, often relying on subtle and implicit signals. The limited richness of the virtual world means that signals and messages often need to be made explicit if they are to get across to the communication partner. This places full control and also responsibility in the hands of the Internet users (O'Sullivan, 2000). An ad-hoc management of online presence can thus be not only unproductive, but also injurious.

Recognising the need for strategic management of online self-presentation, the article uses theory of impression management by Erving Goffman (1959, 1963) to explain online self-presentation behaviour. The theory uses a dramaturgical analogy (Kenneth, 2011, p. 73), seeing the act of presentation as a performance requiring a coherent combination of suitable setting, credible front, and interaction with the audience. Applied to professional self-presentation of scientists, a framework was derived to support the process of decision-making regarding the selection of suitable platforms and the design of presentations. Due to the complexity of the issues, the aim of the framework is not to present a linear, procedure model, but to identify relevant factors and foster understanding of their interplay. As an instrument, the framework serves not only the design, but also the evaluation of scientists' Internet presence.

The article is the result of a conceptual, design-oriented approach to support an

existing real-world phenomenon. As such it uses data from existing empirical research (see Sections 3 and 4) and presents as an outcome a pragmatic framework (see Section 5), supported by case examples (see Appendix A) and tool discussion (see Appendix B). At the same time, it relies heavily on a complex theory (see Section 2), thus aligning the pragmatic, local level with an abstract, analytical level. While the framework is grounded in existing empirical research, its application is presented only on selected cases to create a better understanding. Thus, the framework is a supportive instrument to strategic approach to online self-presentation. Presented alongside with the impression management theory, it gives the scientists a deeper understanding of the need of a consistent online presence and its connection to offline self-presentation. In order to further validate the framework in the practice, it could be used as a foundation of action-research projects aiming to improve scientists' self-presentation skills. This would lead to a stepwise adaptation of the framework to the needs of particular scientist groups as well as to the evaluation of the framework as a theoretical construct. As a theoretical tool, the framework identifies relevant factors influencing the online impression management and thus provides a foundation for a systematic, yet holistic research in this area. It could be applied in phenomenological studies, describing self-presentation of scientists, where it would serve as a foundation of data analysis. Furthermore, it could be used in explanatory studies, researching the reasons for scientists' online behaviour. Here it could be applied to derive data-collection instruments, such as interview guidelines, observation schedules, and questionnaires.

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A Cases

The following three cases illustrate the application of the principles of online impression management outlined in this article. There are three cases: (1) a scientist with a single platform, (2) a scientist with multiple, static platforms, and (3) two scientists with multiple dynamic platforms. The examples have been derived from existing real-world cases. The cases are discussed with regard to the eight identified factors: strategic communication objectives, setting, performance, front, regions, teams, feedback, and disruption prevention. The discussion is meant to demonstrate the complexity of the decision situation and the interplay of the factors.

A.1 Single-platform performance

The scientist A works as a senior lecturer at a European higher education institution. Her Internet presence is based solely on her HTML profile on institutional web pages.

Communication objectives. Scientist A uses her Internet presence to make her contact data and relevant resources available to others. As she relies on other communication channels for self-presentation (e.g. conference attendance, personal networking), she does not consider the web page of strategic importance.

Setting. Due to limited time budget and media skills, scientist A uses as a sole setting her institutional profile. This is sufficient, as she understands her Internet presence as an information point for those, who already know her. The institutional web pages are managed centrally in a web content management system, that scientist A can access. Although she is free to include any text and hyperlinks that she wishes, she cannot alter the design and it is problematic to embed media except photos. The institution also expects her to publish certain contact data.

Performance. Scientist A uses the setting for two performances: presentation of contact data and learning resources to students and presentation of contact data and publications to peers.

Front. Scientist A uses common front for both performances, because she does not possess the skills and the time to create one front for each performance in the given setting. As a result, she presents herself as 'a dedicated lecturer, who also does research'.

Regions. Without the help of a web administrator, scientist A cannot create closed regions on her web profile. However, the links to learning resources lead to the institutional students' portal, which can be only accessed by students. This part of her front is thus guarded from outsiders. Other than that, also she considers some parts of her contact data and resources to be meant for students (e.g. consultation hours, learning resources, course information) and others for her peers (e.g. publications, CV), she uses no active means of separating the data. The region division is not even implicit.

Teams. Scientist A recognises two main audience teams, students and peers, for whom the performance is meant. However, she considers it acceptable for outsiders to also access her Internet presence.

Feedback. The web page was set up upon a request of students for electronic resources and due to the demands of the institution. The web page provides no means of giving feedback and scientist A does not solicit any. She however receives some feedback from her students through other communication channels.

Disruption prevention. The data presented on the web page is considered by scientist A to be free of disruptions. Due to the limited amount of content, she considers any further audience guidance unnecessary. She does however take care, that contact data presented on the web page is consistent with the data presented through other communication channels (e.g. her visit card).

A.2 Multi-platform performance

The scientist B works as a researcher at a European higher education institution. His Internet presence is founded on several static profiles: an institutional web page, four SNS profiles, and an additional profile on a resource management platform.

Communication objectives. As a young researcher, the scientist B wishes to use his online presentation for networking purposes. His objectives are to find (or be found by) peers for exchange and research collaboration and to maintain existing connections. This objective is also supported parallel offline activities.

Setting. Scientist B is well aware of available presentation opportunities. Firstly, he is required to present himself on the institutional web pages. Secondly, he chooses to create further presentations on SNS platforms, as the highly structured profiles support person search. Also, SNS focus on contact management. Scientist B possesses one profile on a professional SNS, two profiles on SNS targeting scientists, and one profile on a mostly private SNS. Finally, he has created a profile on a citation-management platform, mostly as a by-product of his work with this platform. The institutional profile is very restrictive, allowing only presentation of name, photo, and contact data. Scientist B compensates this by creating a highly elaborate profiles on the professional SNS and one of the scientist SNS. The other scientist SNS contains less details. The citation-management profile contains only his name and institutional affiliation. The private SNS profile contains detailed information about his free time activities and personal experiences. The selected platforms are partially hyperlinked (see Figure 3).

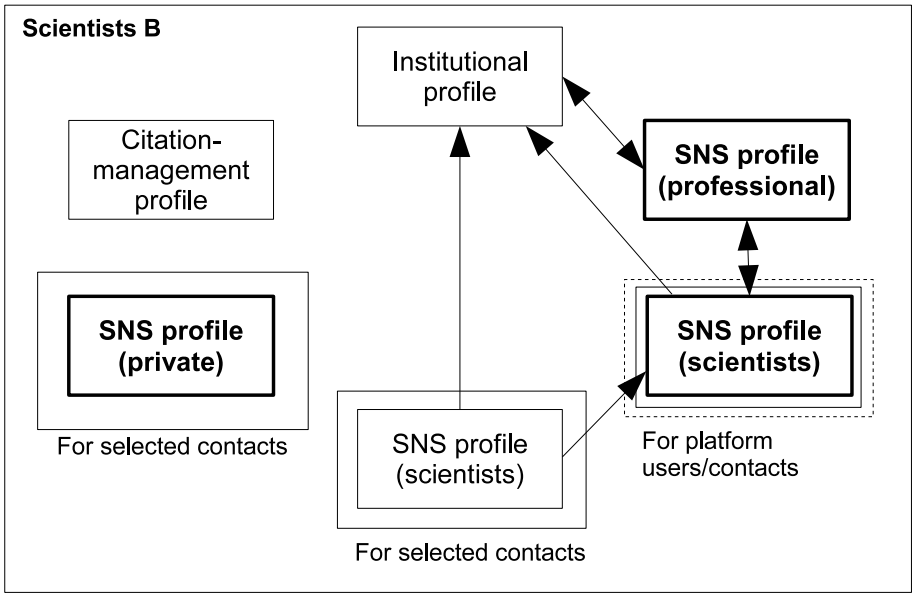

Figure 3: Internet presentation of scientist B

Performance. Scientist B aims to create three performances: a general professional

performance depicting his career, a professional performance focusing on his research expertise, and a private one. The career-focused performance and the expertise-focused performance are allowed to overlap.

Front. Scientist B has three fronts. The first in a private front shown in his private performance on the private SNS platform. Second is a front of 'a talented young researcher, who just embarked on his career.' Third is a front of an already experienced expert in his area of research. Scientist B posses considerable media skills, allowing him to create detailed fronts on the two SNS platforms, including using further documents and media. As his online presence is meant to play a strategic role in his career development, he also engages in audience interaction (e.g. in group forum, through messaging) on all three non-private SNS. This is particularly important for his expert-front, as he needs to demonstrate his expertise in dialogue with others and wishes to strengthen existing connections through interaction.

Regions. Scientist B has created four separate front regions: a private region, a region for the career performance, and two regions for the expert performance. The private region is set up to be accessible only to selected individuals (friends and family). It is not connected to other regions, as the private front might cause disturbance if placed besides the other two fronts. The other two fronts are compatible. On the contrary, witnessing both fronts might provide the audience with a more holistic impression. Hence, the region of the career front (institutional website, professional SNS) is connected with the more elaborate science-SNS profile. However, as this profile is only accessible to platforms members, scientist B can assume that only peers will access it. Furthermore, the second science-SNS profile is accessible only to selected peers and is primarily meant for other scientist from the same research area, who tend ot be present on this particular platform. To guide the audience to relevant profiles, scientist B comments the hyperlinks.

Teams. Scientist B acts as a single-member performing team. He recognises following audience teams: friends and family, existing peer-connections, related peers, and less related peers or experts. Others (e.g. interested public), are considered as outsiders. Although scientist B does not prevent them from viewing his career-oriented profiles, he does not target them. Friends and family are meant to access the private SNS profile, provided they have necessary permission. Members of the less-related

peer-team (e.g. scientists from other disciplines, non-scientific experts) are meant to see the career-front, which is without any access restrictions. Some members of this group may also wish to see his expert-front, if they are interested in his expertise. Parts of this front, however, will be accessible only to platform members of the two scientist SNS. Only existing connections to peers from the scientist's discipline are allowed to access the region on the second scientist SNS platform.

Feedback. Due to the strategic role of the online presence, scientist B interacts with members of the audience teams through the SNS platforms. However, the feedback channels on these platforms are only available to platforms users and partially also only to existing connections. While scientist B can shape his performance according to the feedback of closer ties, he is less likely to receive feedback from weaker ties.

Disruption prevention. Scientist B takes care to present consistent performances within each region and to align performances among the non-private regions. He attempts to guide his audience to appropriate region with the help of hyperlinks and comments. If this fails, the created access limitations to some regions are likely to prevent big disturbances. Strategically, he would like to develop his performance on the citation-management platform. It appears to him, that the extreme brevity of this profile is inconsistent with his other online presentations.

A.3 Shared multi-platform performance

The scientist C works as a professor at a European higher education institution. His Internet presence is composed of an institutional web page, two SNS profiles, and a blog. Scientist D works as a lecturer at the same institution. She is present online with an institutional web page, an SNS profile, and three blogs. The scientists' online presence is interconnected: their institutional profiles are linked and they cooperate on writing a common blog. The aim of this case is to depict the teamwork of the two scientists. The Internet presence of the individual scientists will be discussed only so far as to provide sufficient context.

Communication objectives. The scientists have different objective. Scientist C recognises the Internet as a platform for creating and managing contacts, but not

as a primary channel. His objective is to be findable online and recognisable for his expertise, but he also wishes to have full control over interaction with potential audience. Similar to scientist B, scientist D aims to manage existing connections and create new ones on the Internet, but with focus on future career. Scientist D also uses the Internet to support her hobby.

Setting. Scientist C has a limited overview of possible settings. He uses settings, where he believes that others expect to find him (a professional SNS, where existing contacts are, a private SNS where his friends are, institutional web site, a blog connected to his institution). Scientist D is aware of the choices. Due to limited time budget, she chose to have one very elaborate profile which links to others, less elaborate ones. She also writes on the institutional blog, less often on her personal research blog or on her private hobby blog. The non-private settings are interlinked (see Figure 4).

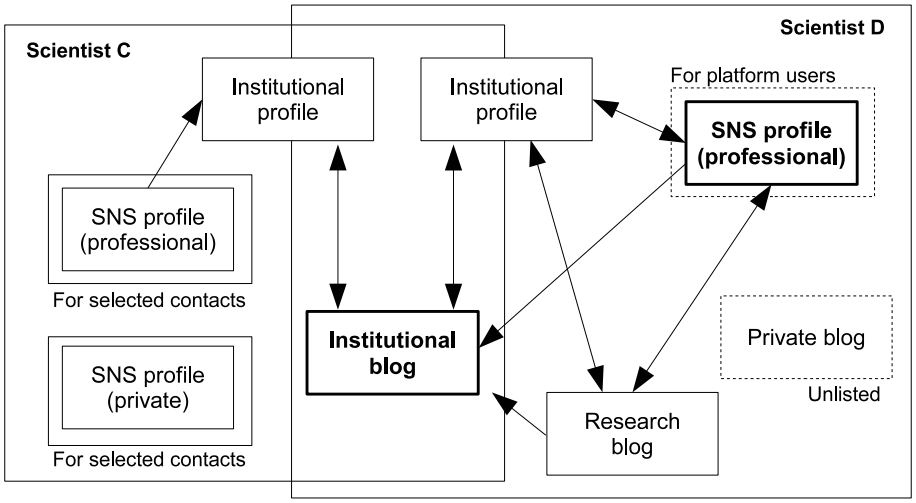

Figure 4: Internet presentation of scientists C and D

Performance. Scientist C wishes to create two performances: one showing his expertise and one private one. Scientist D has three performances: one aiding her career, one expertise focused, and one private one.

Front. Scientist C uses a private front on his private SNS profile, which is unrelated to his second front as an expert in his field. The second front is used in other, non-private settings, especially in the blog. To this end, he uses mainly text-based design in his profiles, wishing to draw attention to the content. Scientist C is interested

in managing only such connections online, that also exist offline. Scientist D uses the institutional profile, the institutional blog, and her professional SNS to present her front as 'a capable lecturer and trainer, who might be interested in a better job'. Her research blog is used to demonstrate her expertise beyond teaching. To demonstrate her media skills, she prefers to use complex design, including hyperlinks and other media. The private SNS profile is served with a private front, with less complex design. As scientist D hopes for new contacts, she offers feedback channels. The differences in the communication objectives and performance aims can lead to disturbances in the common presentation of the scientists. Very different form of self-presentation on institutional websites could convey a chaotic impression. Thus, after a mutual agreement, scientist D opted for a simple institutional web site, linking to her elaborate professional-SNS profile. The blog poses a considerable problem, if the two scientists differ in what content they wish to publish (scientist C: complex, expert articles, scientist D: experiences from taught courses or workshops). An agreement is necessary to align the institutional presentation.

Regions. Similar to scientists A and B, scientists C and D set up regions to separate different audiences. While scientist C controls the access to his private SNS fully, scientist D opted only for an unlisted blog. As the scientists share common institutional presentation, scientist C was dissatisfied with scientist D linking to her private blog from the institutional web page. While the previous preparation of common online presentations took place in an offline back region, the management of the institutional blog requires also an online back region. Such administrative area is used to create blog posts, but also to manage comments. Because scientist D does not wish to interact with the audience, scientist C handles all incoming comments, using this exercise to present her expertise.

Teams. The two scientists have to work as a team to present a performance as institutional members. While for scientist C, his institutional affiliation backs up his role as an expert, for scientist C it is step in her career. As a result, they have different understanding of the audience teams. Scientist C separates the audience in 'experts' and outsiders. His performance is focused on the experts and offers little value to the outsiders. Scientist D wishes to attract broader audience. As the institutional web page and the blog are not further partitioned into regions, the whole audience is presented with the same performance.

Feedback. For scientist C, the online presence is of lesser importance, his interaction with the audience takes place mostly offline. To enforce it, he does not wish to offer feedback channels. Scientist D wishes to present an undisturbed performance and is thus interested in feedback. As a team, they benefit from scientist D's interaction with the audience. This can however influence the expectations of the audience regarding interaction with scientist C.

Disruption prevention. In order to present a consistent performance, scientists C and D have to work together, although the cooperation does not rank high in their objectives. Clearer separation of the regions with consequent guidance of the audience can help prevent inconsistencies. Scientist D in part already uses hyperlinking to guide non-experts, such as interested public, to her own, more suitable blog. Using implicit regions within the common setting can further partition the regions. This would separate the common performance that potentially impairs the individual objectives of scientists C and D.

B Profiling Tools

The following list provides an overview of platforms, that are typically used by scientists to create online presence. While the list is not exhaustive, it can be used to gain general understanding of available settings. The features of the platforms are briefly discussed with regard to online impression management.

B.1 Institutional web pages

Most higher education institutions offer their faculty virtual space for self-presentation. Some institutions expect, that all faculty members will create at least a brief online presentation of themselves. These pages can be classical HTML pages, where content is created by entering HTML code or they can be a part of a web-content-management system (WCMS). In the letter case, users are often provided with what-you-see-is-what-you-get (WYSIWYG) editors. Some institutions may even offer an internal SNS (in this case, the following section on SNS are more applicable). An online profile presented as a part of an institutional web presence can be subject to corporate-design regulations to ensure a consistent institutional presentation.

Setting. Depending on institutional policy, scientists may be expected to create a single profile page or several sub pages. At some institutions, the presentation may be limited to entering key personal and contact data. In most cases, it is possible to create hyperlinks to and from the institutional presentation.

Performances. Due to the closed connection to the institution and the often imposed institutional design, this setting is suitable for performances related to the role as a scientist and member of an academic institution.

Front. HTML pages offer the scientists a high level of flexibility to create suitable fronts. However, this can require knowledge of HTML programming. WCMS offer WYSIWYG editors that can be handled without this knowledge, but more complex fronts may still require HTML programming. Furthermore, the design of a personal front can be limited by institutional policies. In case of WCMS, restrictions are a

likely to be already implemented in the system, limiting the type of content and content design that the scientist can create.

Regions. Many institutions expect their faculty to create one-page presentations. Such arrangement can make it difficult to put more than one region into the setting. Multi-page presentations can be used to create implicit regions. More sophisticated institutional web pages can even allow password protection for some regions. As a solution, regions can be created on other platforms and connected to the institutional web presence through hyperlinks, forming a multi-platform setting.

Teams. When creating an institutional profile, scientists can be expected to act as members of the institutional performance teams, supporting a consistent web presentation. With regard to the audience, an institutional profile is likely to be visited by very different types of audience (e.g. students, peers, practitioners). This tendency increases, if the profile is connected to other settings. This should be taken into account when creating suitable fronts.

Feedback. Typically, institutional web pages do not offer direct feedback possibilities, but if contact data are provided, feedback can be gained though other channels. It has to be taken into account, however, that the access to the audience feedback regarding the performance in this setting will be limited.

Disruption prevention. To prevent disruptions, the scientists have to present a clear, coherent performance (or a set of performances), that can accommodate different audiences without contradiction. If institutional web pages are considered unsuitable (e.g. too limiting) for some performances, other settings should be used in addition or as an alternative to an institutional profile.

B.2 Private web pages

Scientists can create their own HTML web pages, independent of their institution. While these give them full control over the design and the content, they require a high administrative effort.

Setting. When creating private HTML pages, scientists are essentially presented with an empty Internet space with a particular URL, where they can place any kind of HTML files.

Performances. Private HTML pages are fully flexible and suitable for any performance. In some cases, disturbances may be caused by a performance focusing on the scientist's membership in a particular institution. In this case, the relation of the pages to the institutional web pages has to be made clear.

Front. While scientists have full control over the designed front, they need to have HTML programming skills. Although WYSIWYG editors may be available, they will not be sufficient for more complex fronts. Administration of the front often requires considerable effort and time.

Regions. The scientist can design as many regions as necessary. Password protection of some regions is also possible.

Teams. The scientist is in his or her own team, unless explicitly wishing to team up with others. The audience accessing the pages may vary, but can be guided by the scientist.

Feedback. The scientist may install possibilities for direct feedback, but this will require media or even programming skills. If contact data is provided, audience might use them as a channel. Unless the scientist explicitly encourages interaction, access to audience feedback will be limited.

Disruption prevention. Personal web pages can become highly complex, containing large amounts of content separated over several regions. With growing complexity, the scientist has to manage the consistency and relevance of the presentation.

B.3 Social Networking Systems

SNS provide a possibility for a well structured presentation. While the standardised structure improves searchability, it is also less flexible. From scientists' point

of view, SNS can be divided into three subgroups: professional SNS, scientist SNS, and private SNS. Professional SNS offer presentation opportunities for individuals wishing to manage work- and career-related presentations and contacts (e.g. XING, LinkedIn). Some professional SNS target directly scientist (e.g. ResearchGate, Academia). The structure of the SNS is adapted to academic careers and needs. Finally, some SNS focus on managing private presentations and contacts for exchange with family and friends (e.g. Facebook, MySpace).

Setting. There many different SNS available. While all are theoretically globally accessible, some will attract particular target groups. It is thus necessary to select an SNS, where the target user group agrees with the targeted audience. Scientists are free to create profiles with different levels of elaboration, according to their needs. Most SNS allow hyperlinking to and from the profiles, but there may also be restrictions (e.g. number of hyperlinks to other web pages).

Performances. Depending on the selected SNS, there will be expectations regarding the created performance. A professional-SNS performance will be expected to describe mainly career- and work-related issues, while private-SNS are expected to host private performances.

Front. The front that can be constructed is limited by the standardised structure of the SNS. The structures differ among the SNS platforms. At the same time, the SNS typically offer enough flexibility to create a front according to ones needs. In other cases hyperlinking to other platforms can be used. The front creation requires no special skills, except understanding of offered features. Although the standardisation may make it difficult to access audience directly, most SNS also offer direct interaction channels (e.g. forum, groups).

Regions. In general, SNS offer four regions: private back stage, visible to selected contacts, visible to all platform users, and visible to everyone. On some SNS, it is possible to create several regions for different groups of contacts. These settings can be used for a very effective management of different audience groups. In order to utilise the possibilities, the scientist has to be familiar with available features and needs to invest time in classifying his or her content and contacts.

Teams. A fully public SNS profile can be used for different types of audiences. Within the platform, it is still possible to segment the audience into sub-teams. Sub-performances can be created for example by taking part in a particular discussion group. Team performances are more difficult to manage, as there is no designated back-stage region available.

Feedback. While most SNS offer communication channels (e.g. direct messages, comment wall), these are usually only accessible for platform users. This highlights the necessity to select an SNS where the users correlate with target audience. Serving as an indirect feedback, some SNS also offer viewer statistics that can help to realise what parts of the front are of interest.

Disruption prevention. Within a single SNS performance, most serious disturbances can occur in case of mis-management of audiences and regions, i.e. when information reaches the wrong audience. This can be particularly problematic with private SNS. Further problem may be discrepancies or different levels of elaboration on different profiles.

B.4 Blogs

Blogs (e.g. Wordpress, Blogger) allow the scientists to stage very elaborate performances, that go beyond presentation of personal data. Blogs support the creation of static content (similar to web pages) and dynamic addition of further content based on reverse chronological order or categorisation. Blog management offers high flexibility, calls for little media skill, but requires considerable and regular time investment. A blog can belong to a single scientist, but it can be also shared by several. Furthermore, blogs can be aggregated based on their topic (e.g ScienceBlogs, SciLogs)

Setting. A number of platforms are available for scientists, who wish to use a blog. The feature offers can vary, mainly with regard to available additional features besides the creation of static pages and blog posts. Blogs have a high level of connectivity. It is possible to link not only to and from a blog, but also to and from a single page or a single post.

Performances. Similar to private web pages, blogs can be used for different kinds of performances. However, the use of a blog itself can already create some expectations for the audience. As a result, the intended performance might be influenced or even disturbed by the performance as a 'blogger'.

Front. Blogs often work with WYSIWYG editors and can thus be used without specific media skills. However, more complex presentations will require HTML programming and a thorough understanding of available features. The visual design of a blog can be usually adapted to suit the needs of the blogging scientists, though in some cases it is bound to existing templates.

Regions. Blogs offer four main regions: back stage used by the scientist(s), private region for invited users, region for users who have a direct link (marking the blog as unlisted) and a public region for everyone. The three front regions are however mutually exclusive (i.e. a blog can be either private, unlisted, or public). The front regions can be further separated by implicit boundaries, such as categorisation.

Teams. Blogs can serve different audience groups, according to the needs of the scientist. Different audience groups can be presented with the same blog using implicit regions, provided that the performances are not contradictory. The existing back region allows easy collaboration in performer teams. Teams can be also created across blogs (e.g. blogs of scientists from the same discipline) using hyperlinks (blogroll). In this case, a separate back region (e.g. connection through e-mail) has to be used.

Feedback. Blogs offer a comment function that allows the readers to give feedback to the scientists. The function can be either turned off or controlled by the scientist. Making the comment function available will imply, that the scientist is interested in comments. Most blogs allow the scientist to moderate comments, i.e. decide which comments will be visible to the audience. This helps prevent problematic comments, such as spam or trolls.

Disruption prevention. Disruption might occur, it the content of a blog reaches the wrong audience. This can be problematic, if one blog is used for multiple purposes (e.g. work related blogging and hobby blogging). Further problems can be

cause by disorientation of the audience. The audience can access blog posts or single pages through search engines, thus potentially lacking understanding of the blog's context. If possible, context hints should thus be provided for non-regular readers (e.g. a brief about-text on the side). Also, disruptions can occur through undesirable interaction with audience. The comments and discussions are sometimes used by individuals for personal attacks, that may be undesirable if published publicly. Some individuals may even visit blogs with the purpose of insulting the blog owner and its audience (blog trolls).

B.5 Microblogs

Similar to blogs, microblogs also allow dynamic content addition. However, the content length is limited (e.g. Twitter, identi.ca also FriendFeed, ScienceFeed). Within these limitations, the scientist is free to post any text. Non-textual content can be connected via hyperlinks. The design possibilities of the microblog home are very limited. Microblogs can be easily linked to other settings.

Setting. The most popular microblog platform is Twitter. FriendFeed, which is actually an aggregator, can be also used as a microblog. While there are attampts to establish further microblogging platforms, these have only small audience (e.g. ScienceFeed). With limited characters and little design flexibility, microblogs present an untypical communication channel for many scientists. Integration of microblogs into professional online presentation thus deserves a thorough consideration.

Performances. The content of microblog posts is nor restricted (except its length). Different performances can thus be staged in a microblog setting. As with blogs, the use of microblogs can already create expectations regarding the scientist's performance.

Front. The design of a microblog can be influenced within narrow boundaries (e.g. changing a background image and entering key personal data). The front thus relies strongly on the content of the posts. While the amount of content that can be published per post is very small (e.g. 140 characters on Twitter), microblogs allow rapid updates with less effort than blogs. They are thus suited for fronts which

stress the activities of the scientist.

Regions. A microblog can be placed either in a public region or a private region for subscribed users. The regions are mutually exclusive. There is a small back region for the scientist, where the front can be managed or key messages stored. Better back regions are sometimes offered by supplementary applications (e.g. HootSuite for Twitter). Implicit regions can be created through categorisation with keywords (hashtags). Such boundaries are however very subtle.

Teams. The simplicity of microblogs makes it difficult to address different audience teams, if they access the microblog directly. Microblog post-feeds according to hashtag can be embedded in other pages, such as blogs. If a common microblog is used by several scientists, a separate back region has to be created through other channels.

Feedback. Other microblog users can respond to microblog posts or repeat the message. On Twitter, the feedback is greatly limited by the maximum number of symbols. Still exchange occurs. On FriendFeed, a post can be discussed using more characters, leading to comment threads similar to blogs. In both cases, feedback can only be received from other platform users.

Disruption prevention. Microblog users have to prevent disruption by considering that all posts can be read by different audience teams. Audience orientation is also particularly relevant. Single microblog posts can be found or repeated independent of other posts or the author, which will rob the readers of necessary context. Furthermore, upon reaching a microblog, the user is presented only with last 10-15 posts and is thus potentially unaware of the history of the microblog.

B.6 Resource-Management Systems

Scientists can also use Internet platforms to manage resources relevant to their work or free time (e.g. citations, documents, presentations, photos). The resource management platforms increasingly offer also social networking features similar to SNS. Users can thus create a personal profile and connect to other users. As these features are modelled on SNS, the principles are applicable in a similar way. Additionally,

on a resource-management platforms the scientists' profile is further connected to their published resources (e.g. the publications that they read, presentations that they hold). This feature needs to be taken into account and incorporated into the performance to prevent disruptions.

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