

## Interactively working with digital documents on the Web

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### Abstract:

In this note we argue that it is strange that when working with digital material on the Net the power of networks is not used to allow many types of interaction, involving authors, readers and the information at issue. We explain some of the main features of a system NID (Networked Interactive Digital material) that provides interaction between authors, readers and the content presented.

### 1. Introduction

When we read some information that we find on the Internet, or that was sent to us electronically, it is often annoying that we cannot easily send some feedback on what we like, dislike, would love to have more information on, or just send suggestions for corrections or additions, or ask questions concerning some specific issue. It is also frustrating for the providers of the material that they rarely obtain such information from readers.

We suggest that information is provided like in Austria-Forum [1]. If you look page or pictures, as shown in Fig. 1 below, you always get a green button labelled "Feedback" on the right side.

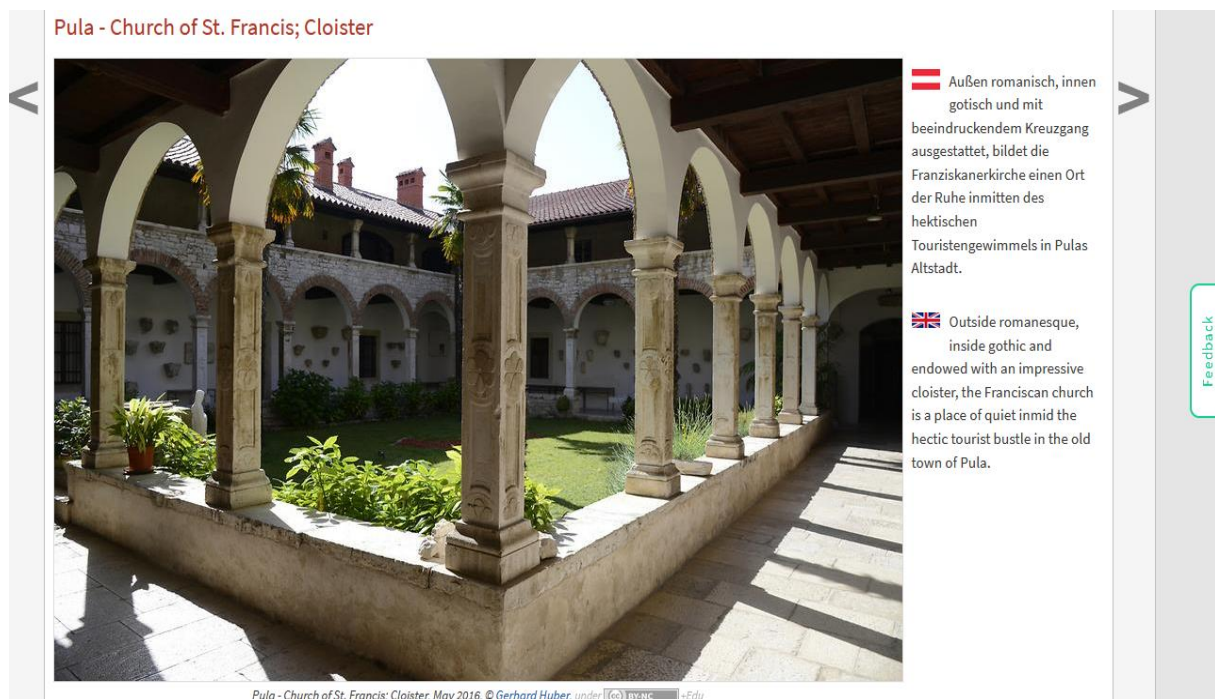


Fig.1. Cloister in St. Francis church in Pula, Croatia. Notice the green Feedback button on the right.

A click at it lets a window pop up where anyone without a need for identification can leave a message, as you see in Fig.2. Of course, if the sender wants an answer, an e-Mail address has to be specified. It is important to realize that such a Feedback does not have to go to the administrator of the site at issue (who is responsible for some 1,4 million media objects), but

will go to the person responsible for the page the Feedback is made on, hence preventing any person or group to be overwhelmed with too many feedback messages.

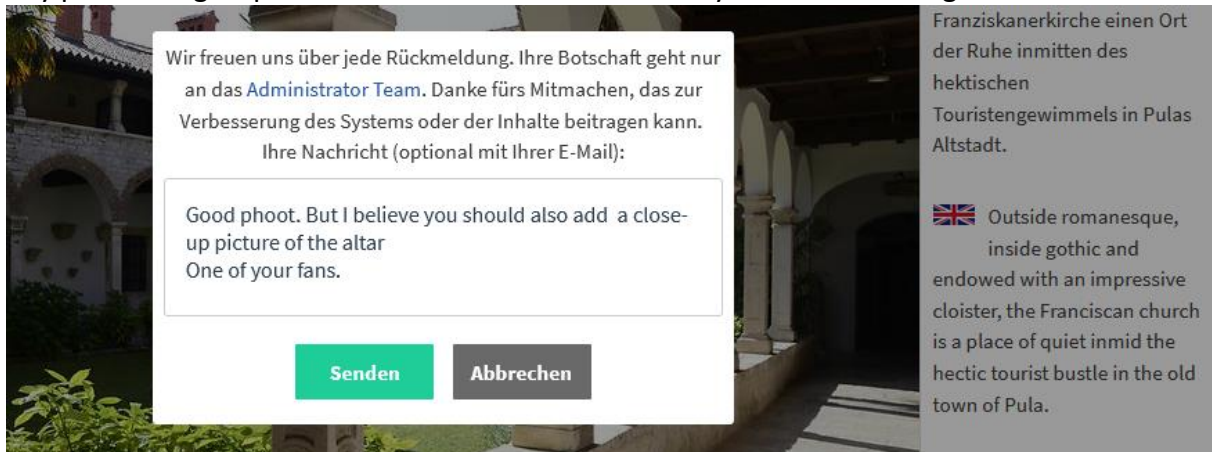


Fig.2. Anonymous Feedback-form

Above examples can be arbitrarily extended. If you go to the Website of any major company and you have a specific question you will be hard pressed to get an answer. The FAQ list, more often than not, does not contain your specific question. A contact e-Mail address is usually missing. You may be able to find a phone number: calling it, you often will end up in long waiting loop, and then the person answering is probably not at specialist in the area you are interested in. (Anonymous) feedback from users to authors solves this problem, as has been discussed in the paper [2].

Thus, it is clear that communication between users and providers of information makes sense. We will presenting a short look at a concrete implementation in Section 2, and will provide a number of applications in Section 3, applications that will be helpful in many situations, yet have been overlooked in the past.

## 2. NetInteractive Documents - NID

Documents of any size (from a few pages to large books) can be easily converted into NID documents if they exist as Word- or PDF-Files or PPTs.

A collection of NID documents allows to find a particular document or documents by specifying author, title, keywords ("metadata") or a category as defined by the administrator of the system.

Within a document, relevant parts can again be found using keywords, a table of contents (that opens at a click on any page of the document) or full-text search. Particularly convenient is the fact that full-text search can be applied not just to one document but to a number of them, avoiding the necessity to e.g. repeatedly search in more than one volume of a series of documents, like issues of a journal, successive brochures that have been published over time or books that belong together.

One can use NID documents in “Simple Mode” or “Full Mode”. In Simple Mode the menu options are **Feedback, Search (full text), Annotation, Discussions, Settings, Login/Logout** and **Full Menu**. We discuss those options but refer for more complex options in Full Mode to e.g. [4]. Feedback needs no further explanation: See the discussion for Fig.1 and Fig.2. Search has been mentioned before. A search for “power” in the short booklet [3] on Tesla as genius of early electricity finds 3 relevant pages, see Fig.3 a, and clicking at the first option, yields Fig. 3b.

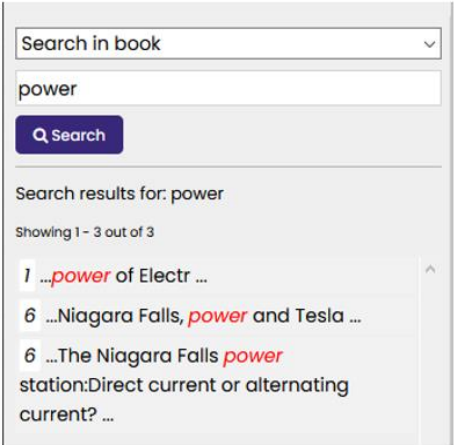


Fig. 3a

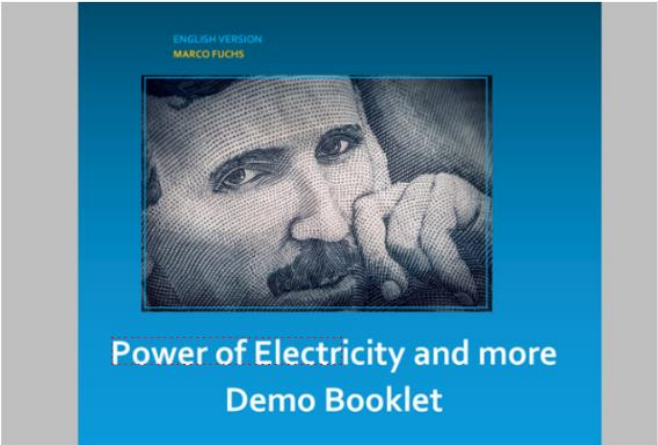


Fig.3 b

The page whose part is shown in Fig. 3b is interesting for another reason. The face of the person (Tesla) has a light-blue rectangle around it, indicating that here is an “annotation”. Moving the mouse into that rectangle we obtain a part, of which is shown in Fig. 4.

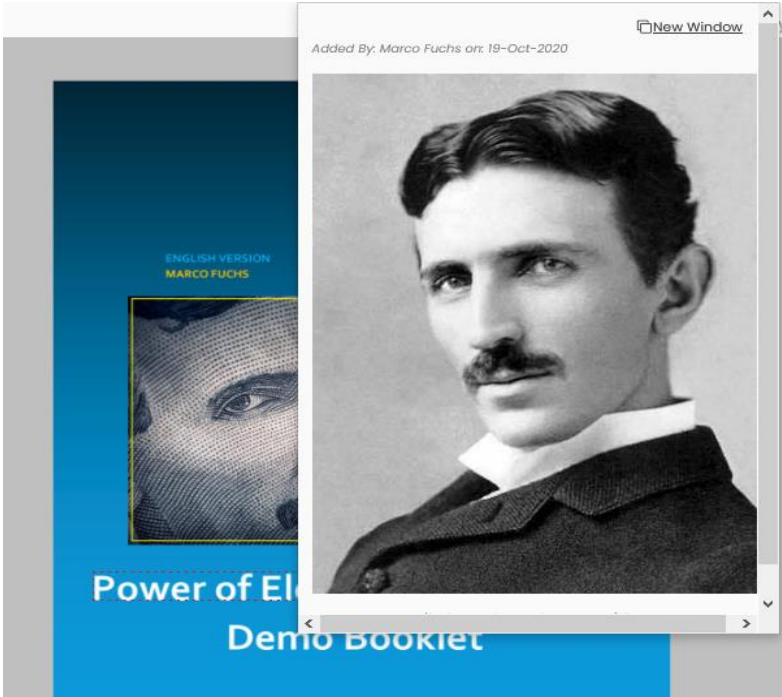


Fig.4

Fig. 4 shows Tesla at a younger age. This Picture was, as it says at the top, added by Marco Fuchs on 18-Oct-2020. This means that Marco Fuchs was logged-in, otherwise it would say “Added By: Anonymous on 19-Oct-2020”.

When choosing the menu-item “annotation” one can draw (after clicking at the pencil icon) the outline of a light blue rectangle wherever one wants on the screen and then use the form shown to add an arbitrary piece of text that pops up in an additional window, or a picture (as in Fig.4) with or without additional text, or the first frame of a video, or some audio-clip, or a link to an arbitrary URL, or a combinations thereof. Unless specified differently, when uploading a document, no registration is needed for annotation or contributions in discussions (see below), i.e. user can stay anonymous. However, whoever is responsible for a document may have specified that registration is necessary (for annotations and contributing to discussions), so whoever made an addition or change can be contacted if necessary: The persons E-Mail is only “know to the system”, but this can be used to contact the person.

In this way a document can be enriched by many further additions, as was indeed done in [3]. (Give it a try!). Of course, if someone makes an annotation the administrator and the person responsible for the document receive a note and can delete the entry; more politely, they can turn it into “Private” (so only the person who made it can still see it) or leave it as public, or make it visible to just specific groups (as the annotator may already have done. A convenient group-hierarchy management system makes this possible). By the way, this is one good reason why one should log-in before making an annotation, since if it is considered unsuitable, it will have to be removed, as it cannot be turned into “Private”.)

Annotations are powerful tools. They allow adding material to a document for all or just for some group(s), linking to related material, alerting others of similar or controversial information and can also work as extensions of discussions.

On the top of every page of a NID document one can see “Discussions”. Look at the discussions on page 6 of [3]. As mentioned for annotations it is possible to demand registration for adding to discussions when uploading a book if one wants to avoid controversial statements and is not willing to check all changes reported around the clock.

The function of the Login menu item is clear (the first time you sign in you have to register as usual in most systems). Signing up is e.g. necessary if you want to work with more complex tools . Also, contributions showing who made them may increase their credibility, and makes it possible to send information about them to a certain group.

The menu-item “settings” allows you to switch to full-screen, or choose other viewing modes, but the standard mode is the “image view”, so usually you should return to it, since only in image view all menu options are available, annotations and discussions are visible, etc.

A click at “Full Menu” gets you into Full Mode with further options. If interested consider e.g. [4].

### **3. Applications of collections of NID documents**

In this section we describe some of the many applications of collections of NID collections that we have come across. We are sure the list is not exhaustive, yet shows that with a NID-like approach a new way of using digital documents is emerging.

### **3.1 NID for distributing information**

Many organisations (Research institutes, companies, governmental agencies... ) are sending out information again and again, if in digital form, then usually as PDF file or in some Wiki-kind system.

In both cases users do not have an easy way to send feedback, and senders are frustrated since they never know if readers are satisfied, or particularly interested in a certain topic, or want to contribute an idea or criticism, etc. If those pieces of information are collected in a NID category, users can not only use all the communicative features of NID, they can also look at early material on topic x with a single search command!

### **3.2 NID for organizational knowledge management, knowledge sharing and knowledge growth**

Similar ideas apply to organizations of all kinds that want to encourage a group to familiarize themselves with certain material by interacting with it and members of the group.

In other cases, the reason to use NID may be topic oriented. One could e.g. imagine a collection of documents and books on the topic of electric cars. Persons with very diverse background are allowed or asked to participate in studying the material, adding their own ideas and viewpoints as annotations or in discussions.

Another important application for some organization or company to use NID documents is the dissemination of PR or even sales information. Consider two typical examples:

3.2.1 Often research organizations or companies provide a monthly, quarterly or yearly report of particularly important developments. Such reports are typically sent to some users in “glossy” printed form, and to a larger group as e.g. PDF file. Unfortunately, feedback is very rare: To write a mail, one has to refer to the part one wants to criticize, ask a question about, add further information, often quite laborious. Also, and in some cases, anonymity is preferred. Well, NID allows anonymity, and when an addition is made, the person responsible for the document is informed automatically of the fact and the spot of change and can change it, if deemed necessary or advantageous.

3.2.2 This also applies if the report is really a sales instrument, showing some new product(s). Again, feedback of any kind is very much desired, but rarely obtained.

One other possibility that makes NID particularly interesting for such applications is the fact that questions or discussions can be asked in a document, such as in manuals that only a certain group (e.g. all members of an organizational unit) can see and use and work with. Within such a group, one can also set up sub-groups with special rights.

It is particularly interesting that a NID document can complement communication media such as WebEx [6] or Zoom [7] very much: These communication platforms--- popular in

times of COVID--- have little temporal stability or usability. One can save a long Zoom Meeting as such, but it is hardly possible to find something there later, or ask a question, etc.

After such a meeting, it makes sense to put short minutes of the meeting available as a document in the NID system and thus offer the opportunity for further discussions, to ask questions, to provide additional sources, and more.

An organization-internal collection of important documents in NID with corresponding comments on the one hand preserves the knowledge beyond the time of a person's presence in the organization, and on the other hand is particularly valuable for newcomers, because those who do not understand information can get help from others using the question and discussion facility.

### **3.3 E-learning features**

Face-to-face teaching or teaching using communication tools is meaningfully supported by NID documents that allow questions and discussions.

If we are thinking of E-Learning situations, a typical group might be a class where members need access to some material just for one term. In such institutions some of the material might be lecture notes of teachers or of books available under some free (typically Creative Common) license. We are aware of instances where a teacher has made a set of notes and a few supporting books available for a course: students of the course were not just supposed to extend the material by stuff found or worked out by them, but the grade obtained for participating in the course depended (!) on how much and what each student had contributed. NID offers the possibility to find for a student and a set of documents all material that has been added by that student to this set, thus making it easy for a teacher to judge the value of what the student has done.

### **3.4 NID for digital libraries**

To offer a collection of documents like books using NID has the advantage that the library can expect some feedback from users, some users may have questions or remarks or will start discussions, or enrich the material by adding textual or multimedia information or linking an entry in a book to another relevant entry in the same or another book, or to some information on the Internet.

Libraries who are already offering digitized versions of some of what they hold can clearly be reluctant to go to the trouble of converting all material to NID format. Also, they may be offering e.g. E-Books under some special license from publishers, or do not have the material as such on their server, but users access - via the library - a database run by a publisher with which the library has some agreement.

Hence such libraries are likely to make only a limited number of documents available via NID, often because of licensing or copyright issues or because the expected benefit will not be sufficient to justify the effort necessary, or use it much like mentioned in 3.2 to announce new books, events, exhibition.

The situation will be different depending on whether one considers a general public library, a library of a university or research institute, or a library just useful for a certain organization, or some other library (= collection of digitized material).

One main reason why NID is sometimes justified is the fact that groups of users can be defined for whom sharing collective knowledge by feedback, annotations and discussions is very much desirable.

In case of a public library, there might be a reading club that at any time is just interested in examining a few books that all members of the club should read and discuss with other members. In such a case the library may make those books available on NID only for the group involved: Since NID books can be stored so that they can be accessed only by a certain number of users the library will be able to negotiate reasonable conditions with publishers, if necessary.

#### 4. Summary

The important point to understand is that NID allows the interaction of users with each other, with the person(s) who have made the digital information available (“authors” or “editors”), and that the digital information can be extended over time by annotations and discussion, all in a very controlled way. Just to indicate how far this can go, a teacher might ask pupils/students to add information to some documents and provide some bonus for good additions. At the end of the year the teacher might erase all annotations and discussions, so the next class starts again with a “clean slate”. The opposite may also make sense: To have a document/ book that keeps growing every year!

This paper has just discussed a few of the features available in NID.

If you want to know more: Look at e.g. one of the books in [5]. Maybe the short 14-page booklet [3] is a good starting point. For still more information consult [4].)

#### 5. References

- [1] Austria-Forum (<https://austria-forum.org>)
- [2] A Note concerning Feedback and Queries for Web pages; N. Delilovic, H. Maurer, JUCS vol. 25, no. 7, 733-739 (2020) ([https://austria-forum.org/attach/User/Maurer%20Hermann/Publikationen 2019 und 2020/19-07-30-Feedback-JUCS.pdf](https://austria-forum.org/attach/User/Maurer%20Hermann/Publikationen%202019%20und%202020/19-07-30-Feedback-JUCS.pdf))
- [3] Demo Book (<https://nid.iicm.tugraz.at/Home/BookDetail/199>)
- [4] The power of NID (<https://nid.iicm.tugraz.at/Home/ViewBook/371>)
- [5] A collection of some NID books (<https://nid.iicm.tugraz.at/>)
- [6] WebEx (<https://www.webex.com/>)
- [7] Zoom (<https://zoom.us/>)