A case for machine allies: PIM systems that age with us

Introduction

As articulated in the CFP, “successful aging is for all of us!”[1] Going one step further, how can we ensure that the personal information management (PIM) systems we build not only age with us, but are built to support our aging?

This proposal argues that creating metrics for digital note taking tools that track metadata (e.g. keywords or tags) can act as a barometer for these types of PIM systems’ longevity and usefulness by highlighting efficacy and efficiency. When various metrics show that our systems have low density keywords, keywords associated with only one note, we can rest assured that while our human memories might change with age, our PIM systems will withstand the test of time to support our memories as machine allies, laying foundations for creativity to be born out of our lifelong research.

In this document, the motivation for creating standarized metrics is discussed, as well as providing examples of such metrics. Finally, this proposal unpacks the “how”, arguing that by leveraging the plug-in ecosystem system of various notes, metrics can be gathered.

Standardizing metrics

In order to create masterful PIM systems, we need a reliable feedback loop. Standardizing metrics that measure our system’s digital organization efficacy create reliable data and dialogue that help us to better understand our PIM systems. When we have data (informed by the aforementioned metrics) about how we use our PIM systems, we better understand how to care for our PIM systems, ensuring that as they mature, they are masterful.

Research shows that to improve at any particular task, to gain deep expertise, we need feedback in a timely manner. Without feedback, we might spend time as a digital organizer, but stuck in what the Dreyfus[2] model calls the “Novice” stage. To elevate ourselves and our systems beyond a novice or advanced beginner to an expert, we need to become competent and proficient.

One example metric that serves as a tight feedback loop is a **“sparse keyword count”**: the number of keywords (or tags) that are only associated with one note. Keywords are metadata that can be assigned to a piece of information, allowing the information to be found again by browsing or searching[3]. However, keywords associated with only one piece of information — notes in this case — lose their utility, adding unnecessary clutter to our system. Tracking sparse keywords signal to users that their digital note taking system demands attention, by highlighting that some subjects/topics are underdeveloped.

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[1] https://easychair.org/cfp/PIM2022
[2] https://www.tandfonline.com/doi/pdf/10.3402/meo.v15i0.4846
[3] https://en.wikipedia.org/wiki/Tag_(metadata)

Another example metric is **“unlinked notes”**. Most note taking applications allow users to link one note to another note(s). OneNote natively supports note linking, and support for note linking was designed to allow the user to “[discover] other related notes quickly”[4]. For the same reason, Evernote natively supports internal links[5]. By creating notes that link to one another, users can monitor and manage data fragmentation, which can be defined as the ever-growing proliferation of data that prevents individuals and organizations from fully utilizing its value[6].

In a study of data fragmentation, researchers relied on conducting interviews, capturing screenshots, and questionnaires. In addition to qualitative measurements, an aspect of data fragmentation can be measuring the note taking application’s programming interface (discussed in more detailed below). Monitoring data fragmentation by tracking “unlinked notes” allows PIM practitioners to gauge how fragmented their note taking system is. The higher the number of unlinked notes, the greater fragmentation. Maintaining a low unlinked count promotes the longevity of PIM systems.

Both sparse keywords and “unlinked notes” can lead to useless information — digital clutter. As William Jones puts it: “We keep information that turns out to be worse than useless — it gets in the way and may distract our attention from information that really is useful. We choose not to keep information that turns out to be important. We then suffer the extra time of finding this information again or, worse, we don’t find this information or forget about it altogether.”[7]

Ultimately, through monitoring various metrics — such as sparse keyword count and “unlinked notes count” — user data can support user decisions instead of becoming burdensome or a user deterrent.

Extracting metadata across tooling using plugin ecosystem

The number of note taking tools continues to grow. Evernote hit the scene in 2000[8]. TiddlyWiki launched in 2004[9]. OneNote launched in 2014. And new players continue to enter the digital note taking space. Roam Research hit the scenes in 2017, starting off with one user and fast forward 3 years later, has more than 60,000 users[10]. Notion, with over 4 million active users[11], launched in 2016[12]. Both older and newer systems have one thing in common: application programming interfaces (API) that allow developers to create custom plugins.

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[4] https://support.microsoft.com/en-us/office/create-links-to-notebooks-sections-pages-and-paragraphs-in-onenote-for-windows-10-48dd0e82-623c-405d-b63a-df4eaf55c72a

[5] https://help.evernote.com/hc/en-us/articles/208313588-Create-internal-note-links

[6] https://www.cohesity.com/what-we-do/mass-data-fragmentation/

[7] https://cybra.lodz.pl/Content/1081/issues/issue9_3/jones/index.html

[8] https://en.wikipedia.org/wiki/Evernote

[9] https://en.wikipedia.org/wiki/TiddlyWiki

[10] https://medium.com/age-of-awareness/the-history-of-roam-research-and-the-roamcult-4c1e1897633d

[11] https://www.simple.ink/blog/notion-stats

[12] https://en.wikipedia.org/wiki/Notion_(productivity_software)

Through these plug-ins, users can capture metrics, extract relevant metadata (e.g. number of notes, number of unlinked notes, number of sparse keywords) that can be stored, reviewed, and monitored throughout the note taking system's lifetime.

Plugins are therefore an integral part of maturing PIM systems. Regardless of what current note taking tool you use today, as long as the tool supports API access, plugins can be created and produced to ensure that the right metadata is captured and users' PIM journeys can continue to evolve while human memory changes, and in some ways, devolves with age.

It is also not uncommon to see users' needs change - they may switch from one note taking tool to another. In some unfortunate instances, note taking tools may be deprecated. For instance, Circus Ponies, another popular note taking application, was operational for 13 years before closing down, requiring long term users to transition to other note taking tools.[13] If at the time of deprecation, a plug-in had been created, then metadata could have been captured and switched to another tool - metrics and memories would have been preserved.

Conclusion

To conclude, as individuals, companies and countries come to rely more heavily on software and systems to remember, it is necessary to have metrics in place to ensure PIM systems are not just mirror images of our brains and the messy collections that inhabit it, but living, logical archives that take "full advantage of the knowledge and wisdom that come with age"[14]. This proposal calls for a metric system as a measurement to monitor streamlined, clean PIM systems that aid users in creating repositories of wisdom which can house thoughts, notes, and research, ad infinitum.

[13] https://www.macworld.com/article/227144/app-developer-circus-ponies-calls-it-quits.html

[14]