FACET FOLDERS:
Flexible Filter Hierarchies with Faceted Metadata

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Facet Folders unify conventional folder hierarchies with filtering of personal data based on faceted metadata. Facet Folders can be easily restructured and adapted to user demands.

Motivation

Tools for Personal Information and Media Management (PIMM) generally rely on folder hierarchies for organizing files. However, as personal data collections grow in size, the management of such data and folder structures becomes a significant burden. Specifically,

- folder structures cannot be adapted easily, once a user's needs change,
- a tension exists between content organization for current use vs. future re-use,
- items often cannot be sufficiently filed under one single category, and
- a subordination is imposed on folders although there is often no single "correct" hierarchy (see Figure 1).
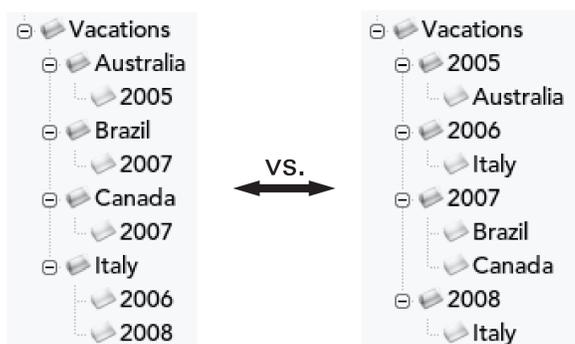

Figure 1: There is often no single "correct" folder hierarchy for a collection of Personal Media data

Nevertheless, folder re-access based on a user's spatial memory is arguably one of the greatest strengths of static folder hierarchies.

Basic Design

With faceted classification schemes, a data retrieval concept suitable for PIMM was introduced which we combine with folder hierarchies. Facets are orthogonal dimensions which partition the metadata of a domain so that every metadata value is assigned to exactly one dimension. Relevant facets in PIMM are e.g. *Time*, *Location*, or (conceptual) *Classification*. Based on one metadata value of a facet, filters
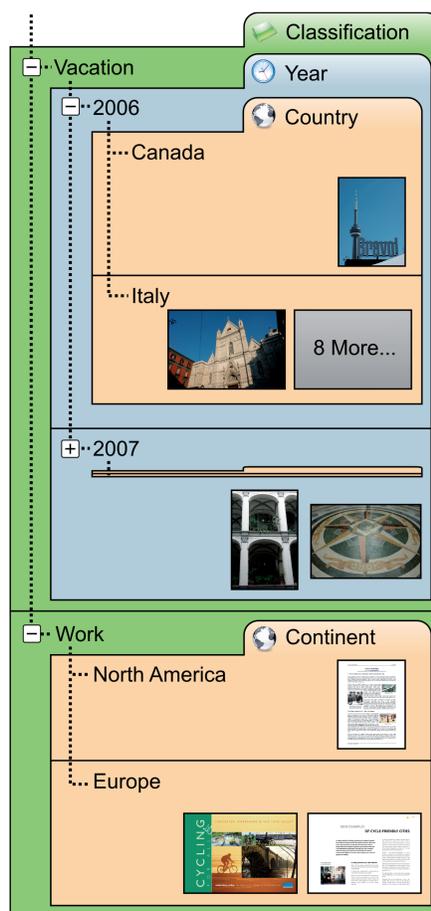

Figure 2: A Facet Folder hierarchy with vacation photos structured by year and country, and work documents structured by continent.

can be defined which we call "Facet Folders". *A Facet Folder is a folder permitting to filter items of a data collection according to the folder's filter attribute*, for example, all items associated with Florence. By nesting Facet Folders into a hierarchy, different views on the dataset can be constructed, such as those illustrated in figure 3. Placing an item into a Facet Folder associates it with the metadata defining the view (i.e. implicit tagging).
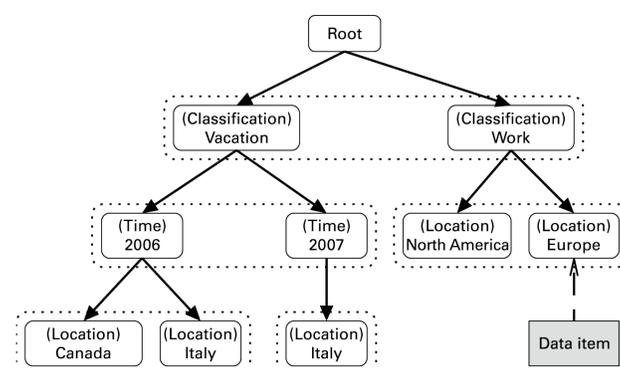

Figure 3: Example of a conceptual hierarchy of Facet Folders.

Restructuring Hierarchies

Facet Folders aim at supporting users in adapting the filter hierarchy to changing needs. This can be achieved by rearranging levels of the Facet Folder hierarchy.

For example, to structure a vacation view by time instead of country, a *Time* Facet Folder could be moved one level upwards in the hierarchy as illustrated in step (1) of figure 4. The result visible in step (2) shows that all time-based Facet Folders of related branches have been automatically moved up, too. This is done to facilitate rearranging from within multiple child branches of a Facet Folder. Furthermore, the number of Facet Folder instances is automatically extended based on the metadata of items available in the target folder.
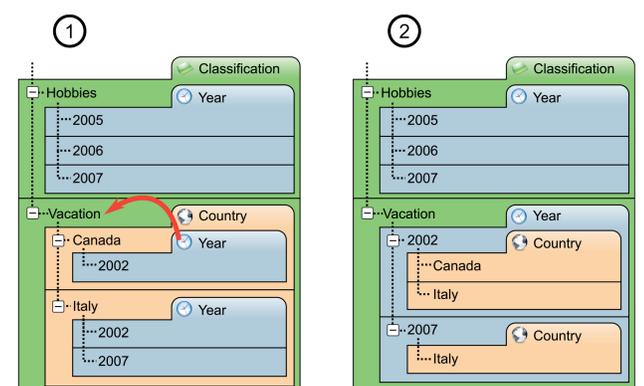

Figure 4: A Facet Folder hierarchy can be easily rearranged according to a user's demands.

Visual and Interaction Design

- Facet Folders are derived from the familiar design of folder-based tools, such as file managers.
- Individual Facet Folders are represented by labeled rectangles, displaying filtered items using thumbnail previews.
- Folders on the same hierarchy level of a branch are vertically stacked and grouped by filter attributes of identical facet type and granularity.
- The hierarchy can be rearranged using a drag & drop interaction.

We already implemented an initial design in C++ using the Qt library.

Benefits of Facet Folders

- Facet Folders enable the construction of different persistent views on a set of personal data.
- Faceted metadata is explicitly exposed.
- Hierarchies can be easily rearranged according to changing demands.
- Items can be classified by simple assignment to Facet Folders.

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