Case Study: Publishing Large Collection of Artworks Using Topic Maps

Grip Studios Interactive
Aki Kivelä & Olli Lyytinen
21.3.2007
Content

- Wandora knowledge management suite
  - Introduction to Wandora
  - Layered topic maps
  - Publishing with Wandora-Piccolo server
- Example project: FNG Collections
  - Sources. Where is the data coming from?
  - Refining source topic maps
  - Visuals out of topic maps
  - Lessons learned
  - Sightseeing tour
Wandora

- Knowledge management suite based on Topic Maps
- Developed in Grip since 2000
- Applied in half a dozen knowledge publishing projects
- Desktop application programmed in Java
- Own topic map API that resembles TM4J
- Utilizes the layered topic map paradigm

http://www.wandora.net
### Base name
Dr. Strange Love or How I Learned to Stop Worrying and Love the Bomb (1964)

### Variant names
<table>
<thead>
<tr>
<th>Display name</th>
<th>English</th>
<th>Finnish</th>
<th>Lang Indep.</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sort name</td>
<td></td>
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</table>

### Classes

### Text data

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<th>Swedish</th>
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<tbody>
<tr>
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### Associations

<table>
<thead>
<tr>
<th>Actor</th>
<th>Role name</th>
<th>Show</th>
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<tbody>
<tr>
<td>Roy</td>
<td>Frank (role name)</td>
<td>Dr. Strange Love or How I Learned to Stop Worrying and Love the Bomb (1964)</td>
</tr>
<tr>
<td>O'Neil</td>
<td>Robert (role name)</td>
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<tr>
<td>Bull</td>
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<td>Dr. Strange Love or How I Learned to Stop Worrying and Love the Bomb (1964)</td>
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<tr>
<td>Creley</td>
<td>Jack (role name)</td>
<td>Dr. Strange Love or How I Learned to Stop Worrying and Love the Bomb (1964)</td>
</tr>
<tr>
<td>Berry</td>
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<td>Dr. Strange Love or How I Learned to Stop Worrying and Love the Bomb (1964)</td>
</tr>
<tr>
<td>Tanner, Gordon</td>
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<tr>
<td>Jones, James Earl</td>
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<tr>
<td>Rimmer, Shane</td>
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<td>Wylan, Keenan</td>
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<td>Herder, Laurence</td>
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<td>Tamarin, Paul</td>
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</tr>
<tr>
<td>Hayden, Sterling</td>
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</table>

### Director

<table>
<thead>
<tr>
<th>Director</th>
<th>Show</th>
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</thead>
<tbody>
<tr>
<td>Kubrick, Stanley</td>
<td>Dr. Strange Love or How I Learned to Stop Worrying and Love the Bomb (1964)</td>
</tr>
</tbody>
</table>
Layered topic maps

- There is a need to combine several knowledge packages
- Topic merging rules make this possible
- At the same time should try to keep different sources separate
- Layer paradigm keeps topic maps internally separate but presents them to user as one merged map
Applications of Layered TM

- Combine information from different sources, possibly third party topic maps
  - Updating separate sources is straightforward because of layers
- Organize information with layers and toggle layer visibility to only see information that is relevant
Plug-in architecture in Wandora

- It is possible to add import, export and other features through plug-ins
- A few examples of implemented features
  - Read XTM, LTM, RDF; write XTM
  - Read metadata from images, MP3, email
  - Tools to add images to topic map and upload them to an online repository
Wandora-Piccolo server

- Java based Apache Tomcat web application
- Piccolo is a proprietary, light weight, extendable application framework
- Can load Wandora project files directly
- Uses Apache Velocity template engine
Velocity templates

- Velocity templates are a kind of scripting language that produce the final HTML (or other) representation of topics.
- Templates have direct access to the Java topic map classes.
- Velocity only sees the merged topic map.
Caching of pages

- Caching would improve performance
- However tracking changes in layered topic map is very hard
  - Topic merges and splits affect many pages
  - It isn’t clear what topics are visible on a page
  - Someone else might make direct changes in the database containing the topic map
The Project: FNG Collections
What? When? Who?

- Large-scale topic map application to promote art collections of Finnish National Gallery
  - 37000 artworks, 3600 artists
  - 110 000 topics, 470 000 associations, 95 000 occurrences
- 2006-2007, Launch May 15th
- Finnish National Gallery, Aimari Oy, and Grip Studios Interactive

Finnish National Gallery
http://www.fng.fi
Grip Studios Interactive Oy
http://www.gripstudios.com
The Big Picture!
(very simplified version)

- Collecting Data
- Refining Data
- Publishing Data
Data sources – Muusa

- Information system developed by FNG and Aimari
- Stores the definitive knowledge about artworks and artists
- Used in 18 different art museums in Finland, >70 000 artworks
- Relational Database

Muusa
http://www.muusa.net
CIDOC Conceptual Reference Model
Data sources – Muusa Export

- Definitive data package
- SQL → LTM
- Why LTM?
  - Easy to generate
  - Compact format, small file size
- Imported to Wandora as a topic map layer
Data sources – Enrichments

- Additional knowledge to spice, expand, and refine the Muusa Export
- Manual construction with Wandora desktop application
  - Data extractions
- Topic map layer
Data sources – Layers

- **Muusa layer**
  - Information from a huge relational database
  - Layer data is updated periodically by converting original database into a topic map

- **Enrichment layer**
  - Managed continuously
Refining the data

- Deleting unnecessary topics and associations
- Using Wandora’s layers to
  - Rename topics
  - Merge identical topics
  - Thin down dense categories with merge
- Special tools to
  - Process complex associations (CIDOC CRM)
Refining the data

- Fixing topic types
  - Types used to group similar topics
- Fixing subject identities
  - Ease ad hoc construction of subject identifiers
- Inserting data chunks
  - Iconclass vocabulary (English and Finnish)
  - Muusa keyword – Iconclass bridge-associations

Iconclass
http://www.iconclass.nl
Other resources – Images

- Need for 8 different versions of single image!
- Subject locators and scoped occurrences were tried but found unusable
  - Topic map size exploded
  - Immature tools to handle large collections of subject locators and occurrences.
- Solution: Single image identifier and separate application to resolve and generate the requested image version.
Publishing data

- Wandora-Piccolo framework
- Two actions: View topic and Search
- Velocity templates
  - Producing HTML documents
  - >90 template files, template hierarchy depth ~4
  - Choosing template using topic’s type and subject identifier
Publishing data

- Minimized code in Velocity templates
- Java library class including useful methods
  - Get players of topic X where association type is Y and player’s role is Z.
  - Get topics from given collection having association X.
  - Sort associations along player X.
  - etc.
Publishing data

- Special GUI topics defining
  - GUI properties
  - GUI texts (→ No language dependent texts in templates)
- Numerous invisible topics and associations
- Topic map model not visible in HTML visuals
The Big Picture!
Lessons learned

- Asymmetry of language versions
  - Finnish version > English version > Swedish version
- Managing subject locators
  - No subject locators but specific application resolving external resources
- Keyword bridges
  - Muusa keywords ↔ Iconclass keywords
- Metadata in topic map
  - Topics defining GUI properties and GUI texts
Lessons learned

 Presentation of topics
  - Careful template design – avoid flat hierarchy
  - Numerous invisible topics and associations
  - Topic != HTML page
  - Topic map model *not* visible in HTML visuals

 Scalability
  - Database topic maps vs. Memory topic maps

 Numbers are bad
  - Dates, measures etc.
  - Occurrences ➔ Topics
Sightseeing tour
Screenshots from the FNG collections site
Browse, search and find information on the works, artists and collections of the Ateneum Art Museum, the Museum of Contemporary Art Kiasma and the Sinebrychoff Art Museum.

Works
Löydä teoksia eri tavoilla, aiheeseen, teosyypin tai aiottuksen perusteella.

Artist
Selaa tekoja tai taiteilijoiden elämästä, tekijästä ja taiteen historiasta.

Collections
Museon hankintojen lisäksi kokoelmassa on laajalti keskusteltuja ja näkyviä taitoja.

Museums
Browse collections of museums.

Sinebrychoff Art Museum
Ateneum Art Museum
Museum of Contemporary Art Kiasma

Routes
Rakenna oman teokkaiden ja aiheiden muokkan.

Go to route-pages.

Tyko Sallinen: Two Women (Women), 1911
The collections include works by over 8,000 artists.
<table>
<thead>
<tr>
<th>Title</th>
<th>Artist</th>
<th>Main category</th>
<th>Period</th>
<th>Museum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bohemian Fiddler</td>
<td>Silfverberg, Ida</td>
<td>Painting</td>
<td>undated</td>
<td>Ateneum</td>
</tr>
<tr>
<td>Ecc Homo, kopio Guido Renin mukaen</td>
<td>Silfverberg, Ida</td>
<td>Painting</td>
<td>?</td>
<td>Ateneum</td>
</tr>
<tr>
<td>Emunuttajiaan tuunas, kopio William van Mieris</td>
<td>Silfverberg, Ida</td>
<td>Painting</td>
<td>?</td>
<td>Ateneum</td>
</tr>
<tr>
<td>Gentlemen and Ladies on the Terrace, after detail...</td>
<td>Silfverberg, Ida</td>
<td>Painting</td>
<td>undated</td>
<td>Ateneum</td>
</tr>
<tr>
<td>Girl Learning on Her Hand, copy of detail in...</td>
<td>Silfverberg, Ida</td>
<td>Painting</td>
<td>?</td>
<td>Ateneum</td>
</tr>
<tr>
<td>Laulava nainen ja kitarava soittava hermo, kopio...</td>
<td>Silfverberg, Ida</td>
<td>Painting</td>
<td>undated</td>
<td>Ateneum</td>
</tr>
<tr>
<td>Luostotiljota Hellamissa, kopio Isaac van...</td>
<td>Silfverberg, Ida</td>
<td>Painting</td>
<td>?</td>
<td>Ateneum</td>
</tr>
<tr>
<td>Luostotiljota, kopio Andraen van de Veldten muakaan</td>
<td>Silfverberg, Ida</td>
<td>Painting</td>
<td>undated</td>
<td>Ateneum</td>
</tr>
<tr>
<td>Lyhytä oryhtilaa nainen, kopio Arnold Bocenius...</td>
<td>Silfverberg, Ida</td>
<td>Painting</td>
<td>?</td>
<td>Ateneum</td>
</tr>
</tbody>
</table>
Ida Silberberg

Gentlemen and Ladies on the Terrace, after detail in painting by Antoine Watteau.
undated
( work of art )

KEYWORDS

Terasi (4), tanssi (3), seurasalinnu (3), KOHTAUS (788), naiste (117)

EXHIBITION INFORMATION

Musées, Suomen Taidemuseo's 150 Vuotta, Ateneum (salit 8-12)

Nälänen huoneet, Taideella Ateneumin kokoelmista 1649-1950.
Kemmitta, Konstn Ateneums something 1849-1950.
Mooman Roin, Art from collection of the Museum of Finnish Art.

Eräät raakaasesta, Tkanäinen taidekuvat, Vadas, 13.8.-27.8.
2006

Suomen Taideryhmä, näyttely, Hartwallin talo 1867

More details on artist Ida Silberberg.
The collections contain over 36,000 works. Here are a few tools for grouping the material.
Installation is a composition of objects or materials built in an undefined indoor or outdoor space.

<table>
<thead>
<tr>
<th>ARTWORKS (1 - 10 / 48)</th>
<th>WITH PHOTOS (40)</th>
<th>ALL (136)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Artist</td>
<td>Main category</td>
</tr>
<tr>
<td>A Little Later - meanwhile back in the jungle ...</td>
<td>Sluksnen, Veli</td>
<td>Installation</td>
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<tr>
<td>Artery</td>
<td>Heino, Timo</td>
<td>Installation</td>
</tr>
<tr>
<td>Boundary I</td>
<td>Kanervo, Maja</td>
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<tr>
<td>Boundary II</td>
<td>Kanervo, Maja</td>
<td>Installation</td>
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<tr>
<td>By the Tuomela River</td>
<td>Nevalainen, Peeka</td>
<td>Installation</td>
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<tr>
<td>Castle in the Air and Hiding Cottage</td>
<td>Heiskanen, Olli</td>
<td>Installation</td>
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<tr>
<td>Corner</td>
<td>Toikka, Antero</td>
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<tr>
<td>Dialogi</td>
<td>Heino, Timo</td>
<td>Installation</td>
</tr>
<tr>
<td>Did I Reach a Harbour?</td>
<td>Kaikkonen, Kaarlo</td>
<td>Installation</td>
</tr>
<tr>
<td>Documents from the Archives of New Generation</td>
<td>Kim, Jussi</td>
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</tbody>
</table>
Installation

Installation is a composition of objects or materials built in an undefined indoor or outdoor space.

<table>
<thead>
<tr>
<th>ARTWORKS</th>
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<tbody>
<tr>
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<td>Marja Kamervo</td>
<td>Bounded 11 2002</td>
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<td>Pekka Nevalainen</td>
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<td>Otti Haukanen</td>
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<td>Antara Toikka</td>
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<td>Dialog 2003</td>
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<td>Jussi Kivi</td>
<td>Documents from the Archives of the... 1995 - 1996</td>
<td>Kiasma</td>
</tr>
</tbody>
</table>
Pekka Nevalainen

By the Tuonela River, 1986

work of art

THE ICONCLASS SYSTEM

91714VALVA (iconclass) (3), sink, basin (3), vesi (water)

91727AELAA (iconclass) (4), dry river, river bed (1), aaja (the river), the

91727AELA (iconclass) (1), dry river, river bed (1), aaja (the river), the

EXHIBITION INFORMATION

Stift, vaellus pohjoismaisten veistosten paikan - 87,
Kunsthallen, Brandts, Klaedefabrikken, Odense, Danmark
8.1.-15.2.1987 - Pohjoismaiden taidekeskus, Suomenlinna
5.3.-26.4.1987

Kiasma

Pictures of the works of art can be subscribed for publication use
from the Photographic Service.
21 the four elements, and ether, the fifth element (cosmos)

Vesi (yhtenä neljästä elementistä)
(themis: icon classes - system)

- hovry
- spirit of water, nix, undine
- vesi (yhtenä neljästä elementistä), vesi, pigmenti...
- vesi (yhtenä neljästä elementistä), walking on the...

<table>
<thead>
<tr>
<th>ARTWORKS (1 - 13 of 13)</th>
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<th>ALL (13)</th>
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<tbody>
<tr>
<td>Olli Lylykainen</td>
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<td></td>
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<tr>
<td>Another Kind of Fish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olli Lylykainen</td>
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<td></td>
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<tr>
<td>Blood, it or not</td>
<td></td>
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<td>1970</td>
<td></td>
<td></td>
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<td>Pentti Nevalainen</td>
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<tr>
<td>Boat of Water</td>
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<td>1899</td>
<td></td>
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<tr>
<td>Pentti Nevalainen</td>
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<td>By the Tuusula River</td>
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<td>Clock</td>
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<td>1987</td>
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<td>Liisa Liisa Ahlström</td>
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<tr>
<td>Eel Fish</td>
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<td>1982</td>
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<td>Jan Erik Andersson</td>
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<td>Autumn Splash</td>
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<td>1991</td>
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<td>Leena Luostarinen</td>
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<tr>
<td>Vesi</td>
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<td>1969</td>
<td></td>
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<td>Kiasma</td>
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</tbody>
</table>
The collections of the Finnish National Gallery of close to 35,000 works could be described as a collection of collections. In them, the quest of building a national museum collection meets with the life works of private collectors. In addition to the museum’s own acquisitions, they include donated collections of different sizes. There is a story behind each one of them. Selected backgrounds on these collections are presented in the following section, which hopes to take into account both bigger and smaller, newer and older donations. And there are hopefully more to come!

<table>
<thead>
<tr>
<th>ATENIUM</th>
<th>KIASMA</th>
<th>SINEBRYCHOFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antell Collection (4763)</td>
<td>The Carrot Association Collection (165)</td>
<td>Ramsay Collection (783)</td>
</tr>
<tr>
<td>Ester and Jalo Sihlola Fine Arts Foundation Donation (509)</td>
<td>Kiasma Collection (91)</td>
<td>Kilpinen Collection (28)</td>
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<tr>
<td>Vaina Wallin Collection (111)</td>
<td>The Maj-Lis Pitkanen Collection (3069)</td>
<td>Beatrice Granberg Collection (194)</td>
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<td>Antti Suurandler Collection (63)</td>
<td></td>
<td>Antell Collection (4765)</td>
</tr>
<tr>
<td>Ylaji and Namari Kaunisto Collection (96)</td>
<td></td>
<td>Paul and Fanny Sinebrychoff Collection (716)</td>
</tr>
</tbody>
</table>

- Ester and Jalo Sihlola Fine Arts Foundation Donation (509)
Klinckowström Collection

ABOUT THE COLLECTION

Klinckowström's art collection is a typical family collection, built around the core of inherited family portraits. After Klinckowström died, Crown Prince Alexander acquired 28 works from the collection and donated them to the Finnish Art Society in the name of his son, who was a patron of the association. The Helsinki Tidningar newspaper reported on the gift as follows: “The Finnish Art Society has received a donation that is to be viewed in its own right, but even more treasured is the bond that offered it.” The donation came with a request that the best works in the collection would be kept as initial stock for a painting gallery for the association. The request was realized in 1868 when the collection of the Finnish Art Society gained official status.

The donated collection is quite illustrative of what a partly inherited, partly self-acquired society collection from the early 19th century looked like. It contained landscapes, portraits, still lifes, interiors and mythological and religious themes. The pearl of the collection was Lucas Cranach’s Portrait of a Young Woman from 1525. Other notable works in it include, for example, Dirck van Deelen's A Church Interior from 1843, Henriques Fittoro's Life Connoisseur at a Gallery and Godfried van Beboult's still life Paris from 1661. Most of the works in the collection are of Central European origin. The Nordic countries are represented by the artists Carl Johan Fahlbom, Pehr Norquist and Alexander Laureus.

Susanna Pettersson
Senior Planning Officer
Finnish National Gallery, 2008

ABOUT THE COLLECTOR

Swedish-born Baron Otto Wilhelm Klinckowström (1778–1855) moved to Finland in 1818 with his wife, Sara Guthsheim-Brook, and their son. They settled first in the Vuokko Estate in Central Finland and later resided in the cities of Helsinki and Vyborg. Baron Klinckowström was a close friend to Prince Menshikov who was the Governor-General of Finland in 1831–1835 and he was then advanced to the position of member of the Senate. He was also assigned other high-ranking duties past the country’s own governing anarchy.

In 1821 Klinckowström was appointed governor of the county of Viborg, in 1825 member of the Senate’s Finance Committee, in 1830 member of the National Board of Censorship and in 1841 vice-chair of the National Board of Public Roads and Waterways and Lieutenant-General. He resigned in 1847 and was awarded the imperial court ranks of Actual Privy Counsellor and Ceremonial Master.

Klinckowström is not however historically best known for his public service career achievements. His interests lay in the glamorous social life of St. Petersburg, gardening and arts. He was also a board member and vice-chair of the Finnish Art Society, which was founded in 1840.
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