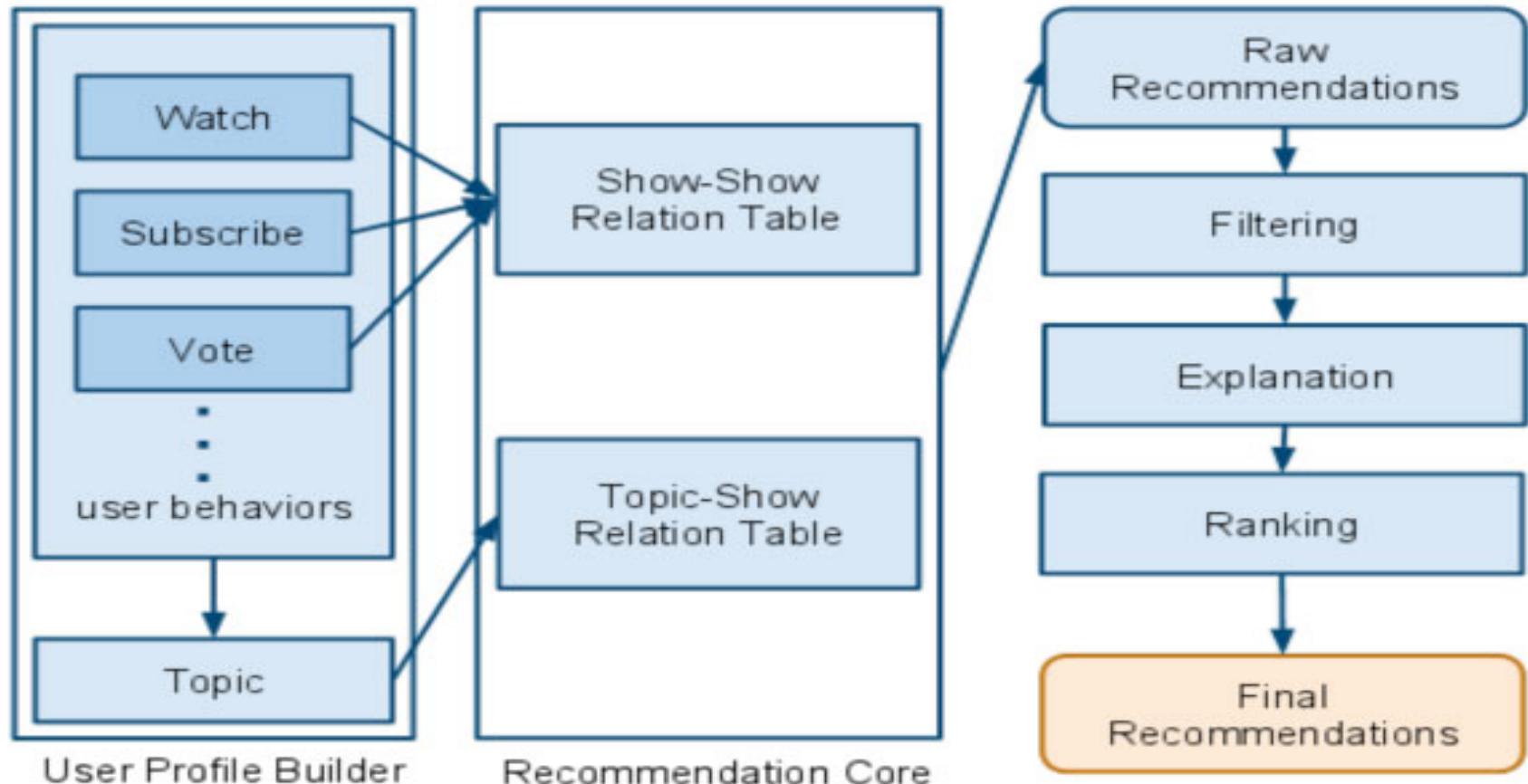


# Hulu Case Study

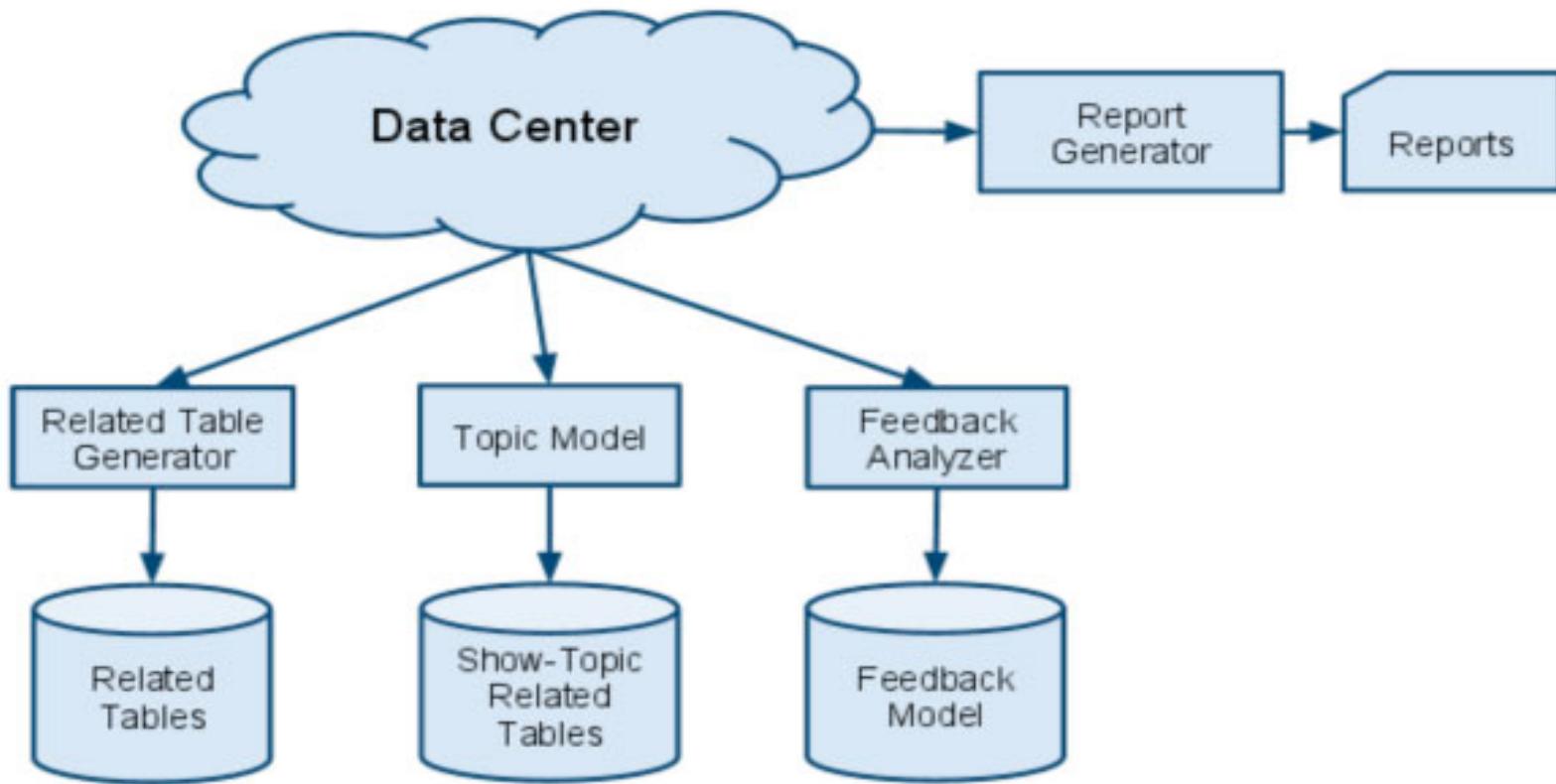
## RECOMMENDATION ENGINES

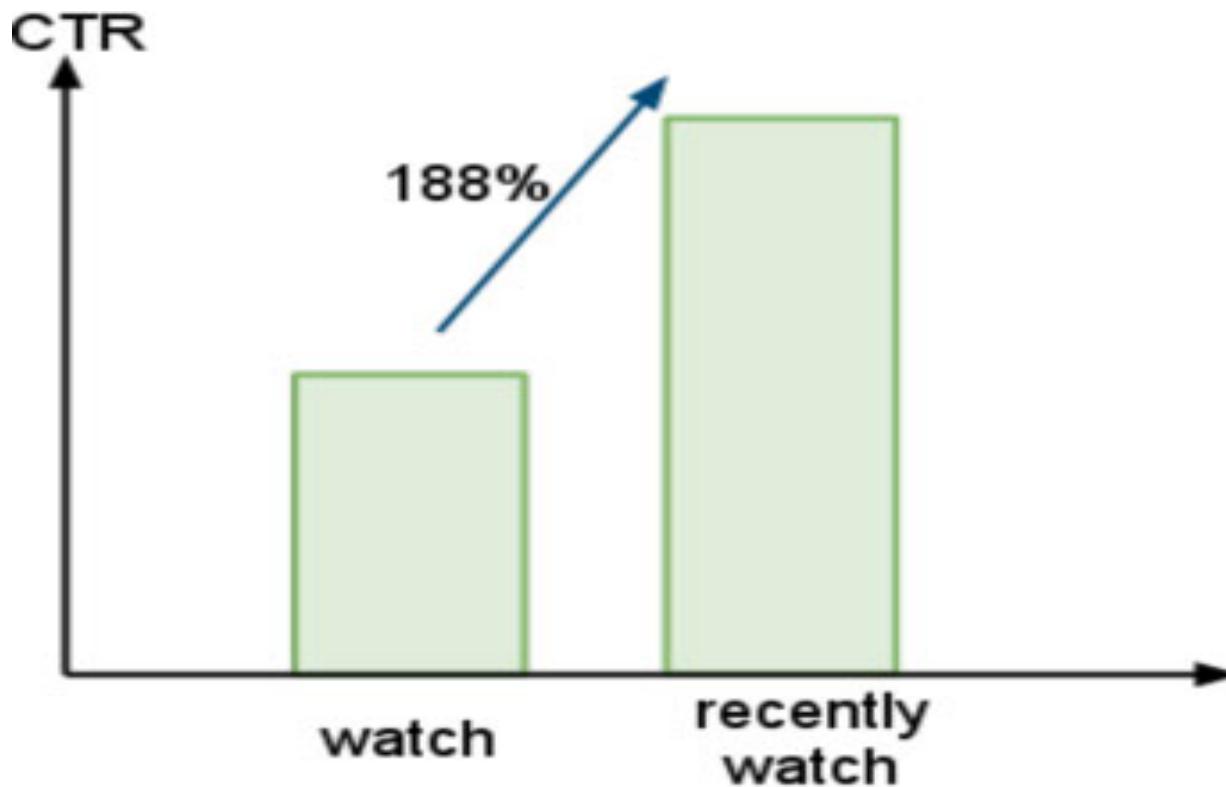
# Hulu: On-line Architecture



# Hulu: Off-line Architecture

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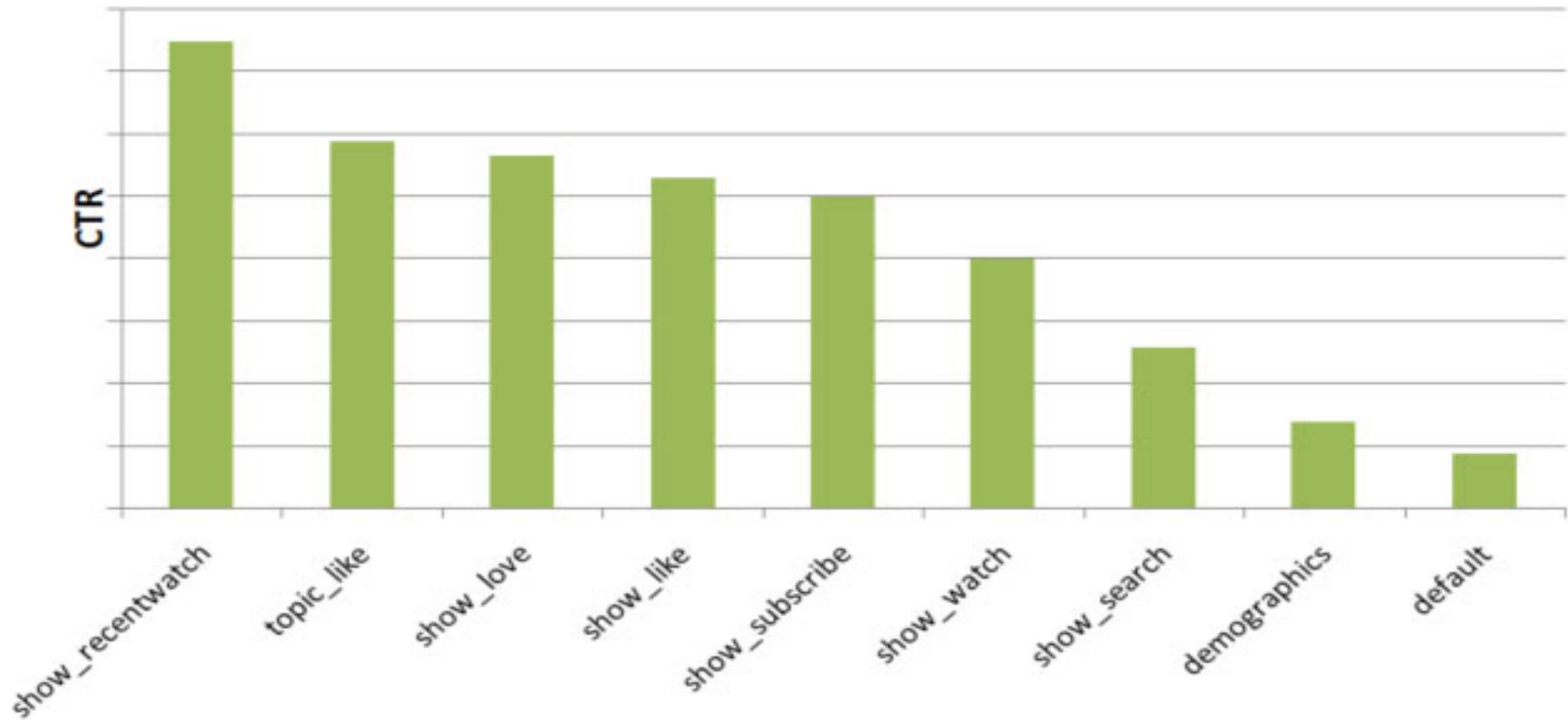


# Hulu: Evidence that Recommendations work



# Hulu: A/B Testing (Click-Through Rate)

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## Hulu: Similarity Metric

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$N(i)$ : Set of users who watched show  $i$ .

$s(i, j)$ : Similarity between show  $i$  and show  $j$

$$s(i, j) = \frac{|N(i) \cap N(j)|}{\sqrt{|N(i)||N(j)|}}$$

*NOTE: Every show will be rated as very similar to popular shows.*

## Hulu: Item-based Collaborative Filtering

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“ItemCF is the basis of all our algorithms”

$N(u)$ : Set of items user  $u$  has preferred previously.

$$p(u, i) = \sum_{j \in N(u)} r(u, j) s(i, j)$$

**p( $u, i$ ): User  $u$ 's preference on item  $i$ .**

$r(u, j)$ : Preference weight (rating) of user  $u$  on show  $j$

$s(i, j)$ : Similarity between show  $i$  and show  $j$