



(54) **DIGITAL CONTENT DELIVERY WITH  
PRIVACY-PRESERVING MEMBERSHIP  
CHECK**

(52) **U.S. CL.**  
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(57) **ABSTRACT**

Methods, systems, and apparatus, including computer programs encoded on a computer storage medium, for selecting and providing digital contents to a client device are described. The system receives a request including a user membership probabilistic data structure encoding user membership information, and constructs, based on the user membership probabilistic data structure, a query for identifying candidate digital components that are eligible for distribution to users. The system obtains the set of candidate digital components by querying one or more digital component databases using the constructed query, selects, from the candidate digital components, one or more digital components, and provides the one or more digital components to the client device for presentation to the user.

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