Identity-based Encryption with Efficient Revocation

Alexandra Boldyreva • Vipul Goyal • Virendra Kumar
Georgia Tech UCLA Georgia Tech

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Revocation is Important

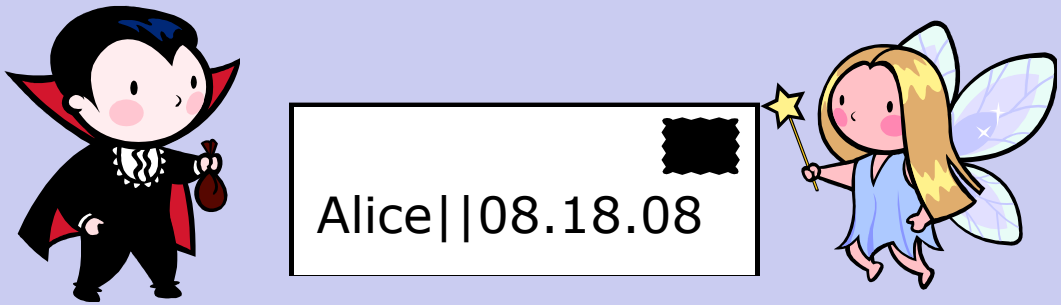
- Key revocation support is important when encryption is used
  - E.g. to limit the use of stolen decryption keys

PKI setting

CRL-online public directory

PK_{Alice}	Valid
PK_{Bob}	Invalid

IBE setting



CRL-online public directory

PK_{Alice}	Valid
PK_{Bob}	Inv

Assume there are 1000 users

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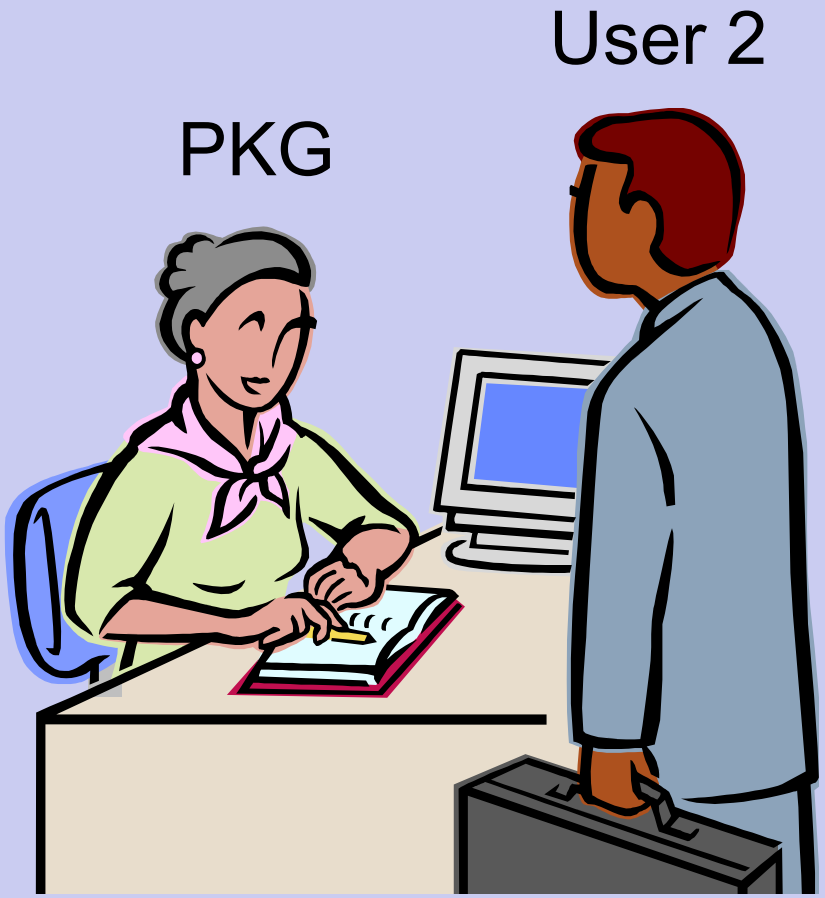

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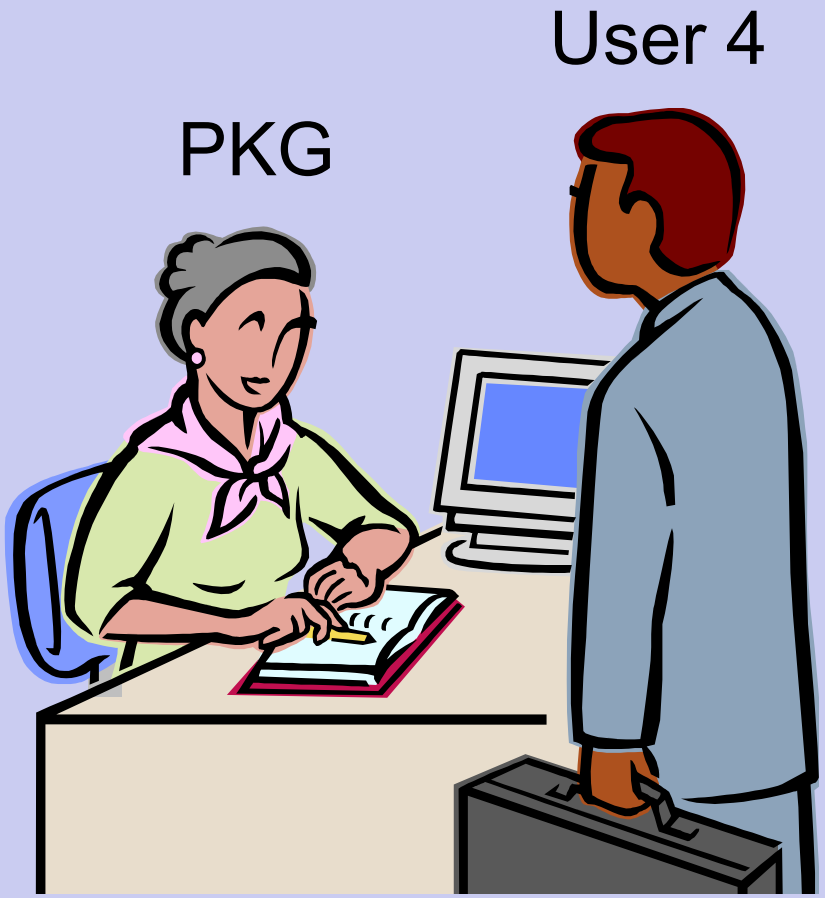
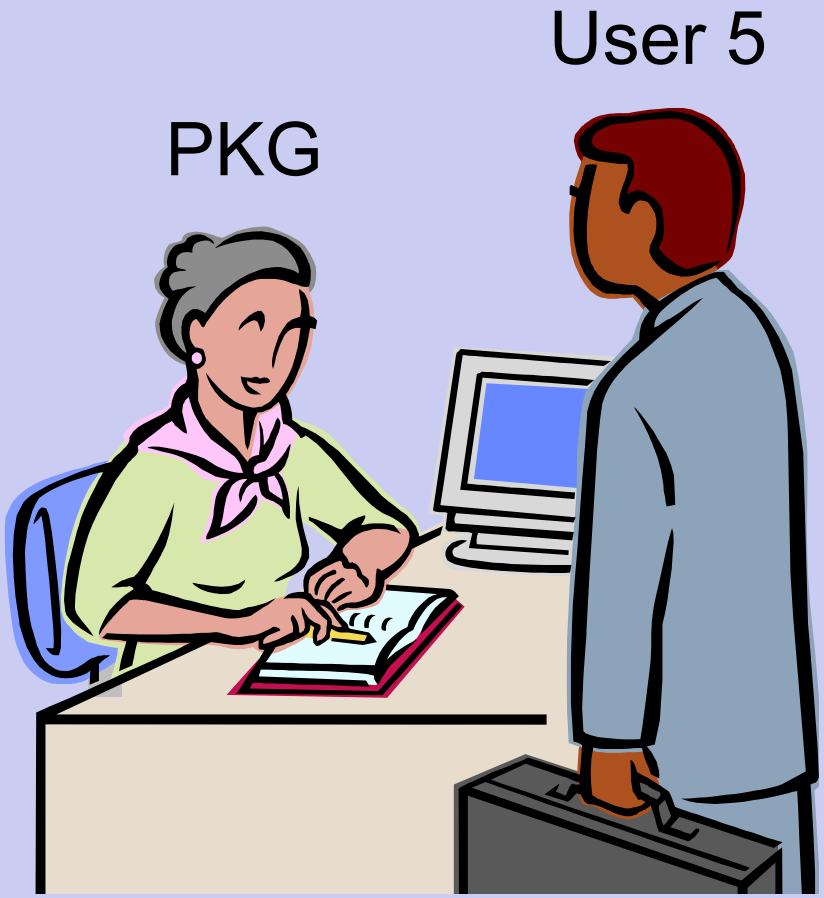


Assume there are 1000 users



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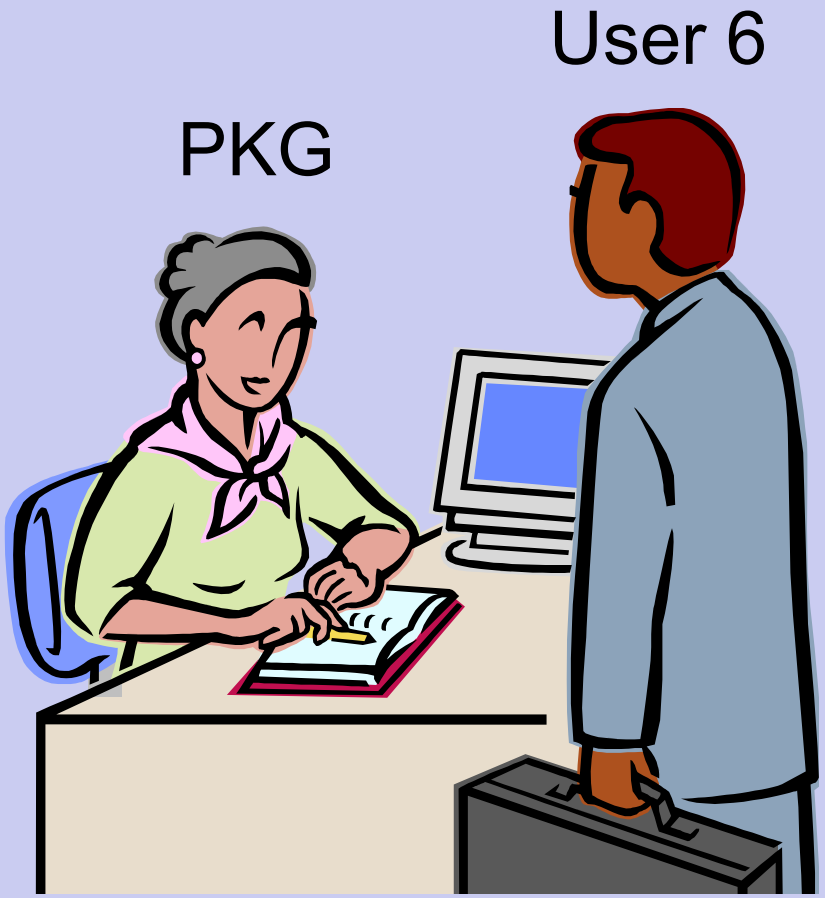

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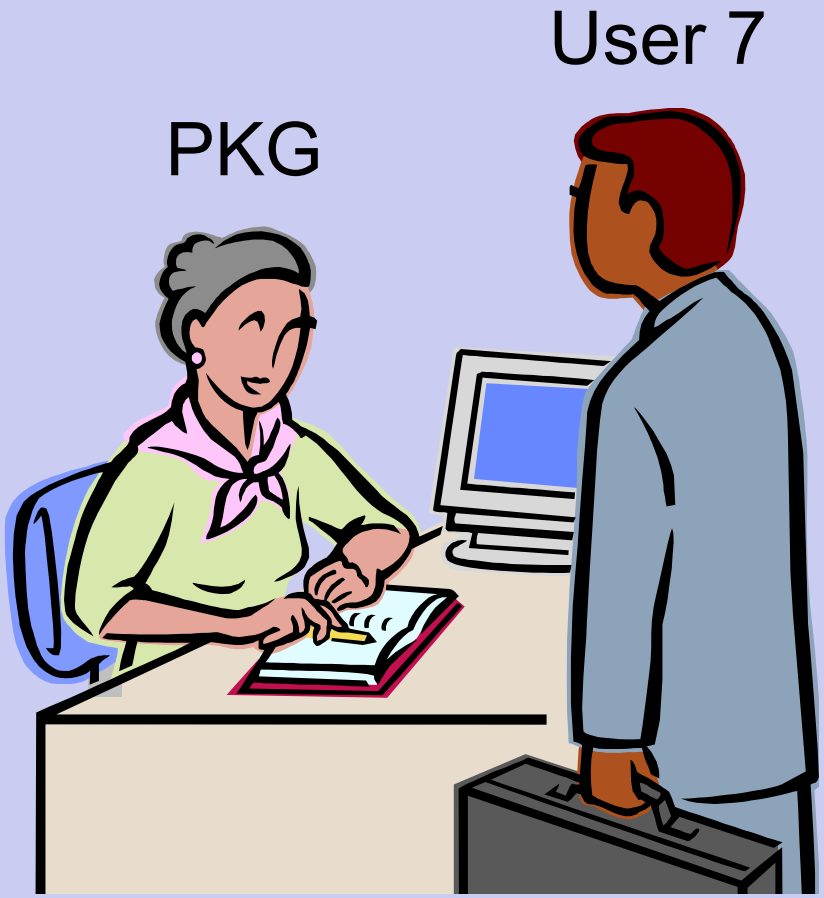

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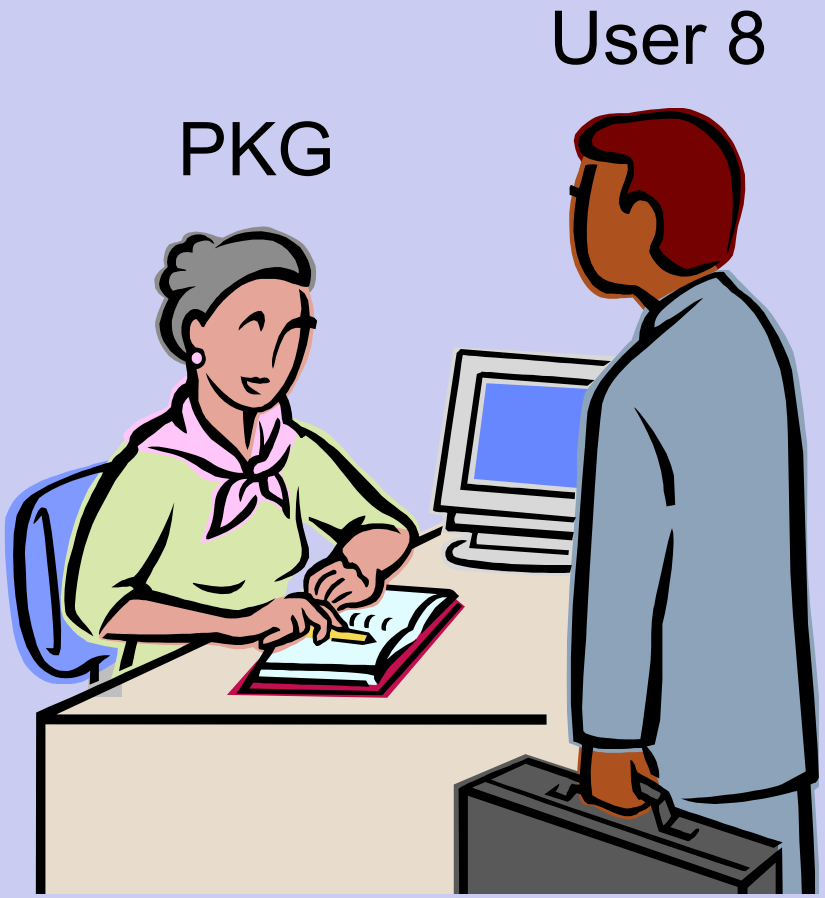

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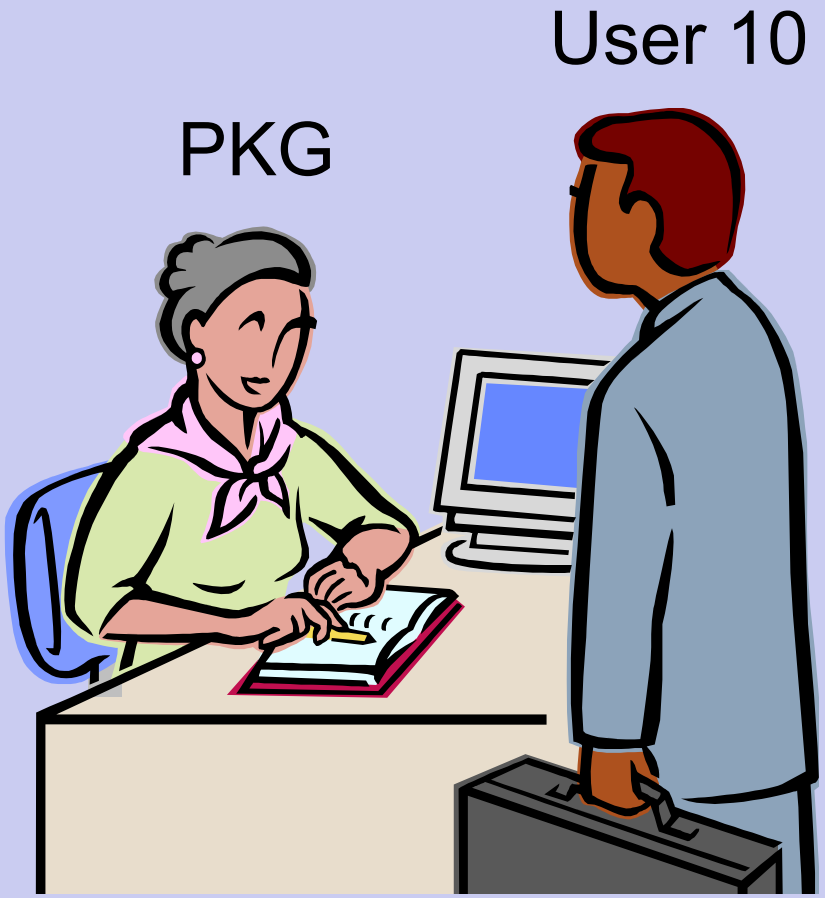

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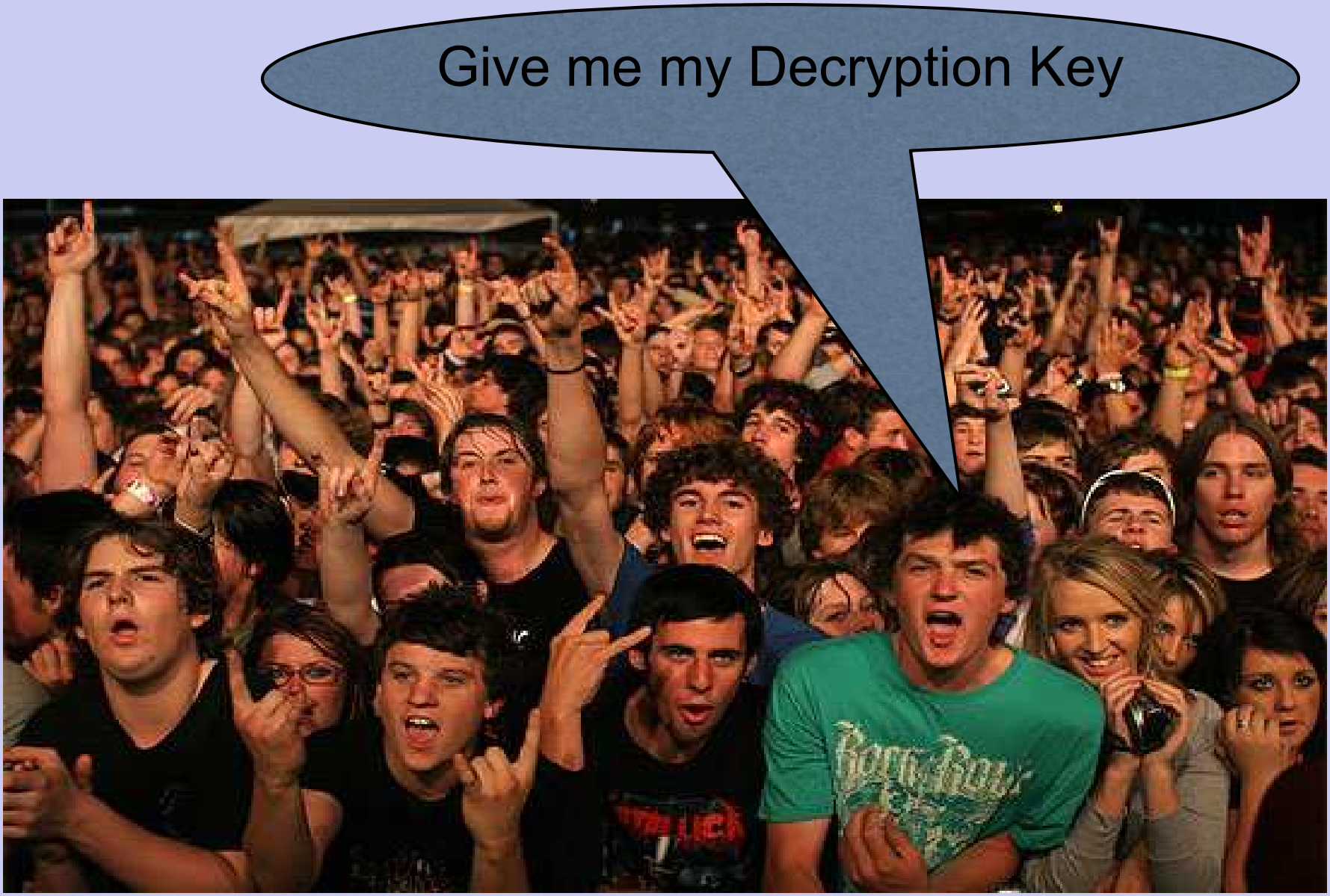

Our Contributions

- We define a new primitive, Revocable IBE, and its security.
- We propose an efficient Revocable IBE construction, where the PKG needs only to do work logarithmic in the number of users.
- We prove security of our scheme based on the Decisional Bilinear Diffie-Hellman assumption.

Thanks!

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