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And Putting It All Together

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Lecture 12

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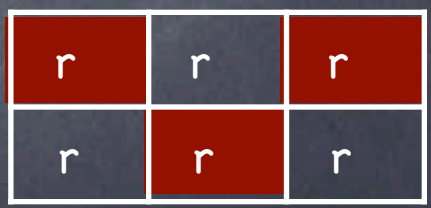

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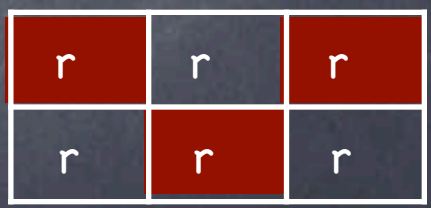

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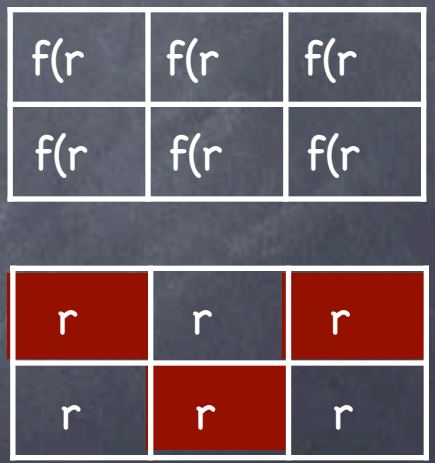

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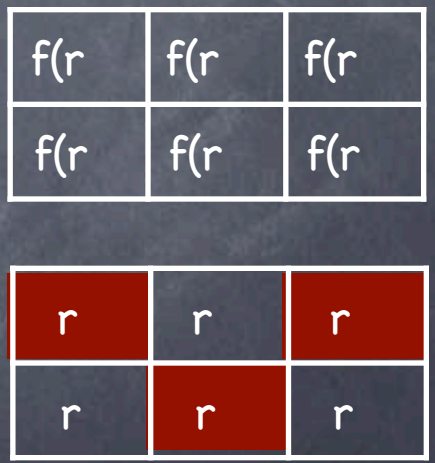

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Lamport's One-Time Signature

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  - This can then be used to build a full-fledged signature scheme starting from one-time signatures (skipped)

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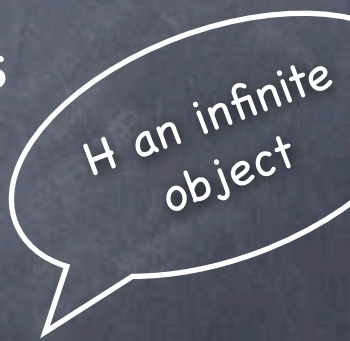

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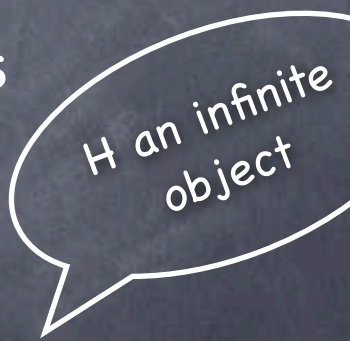

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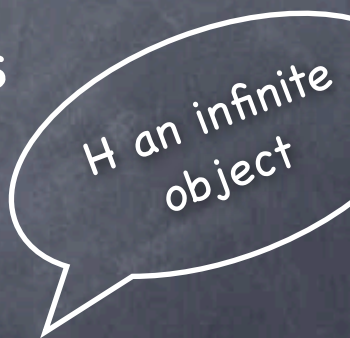

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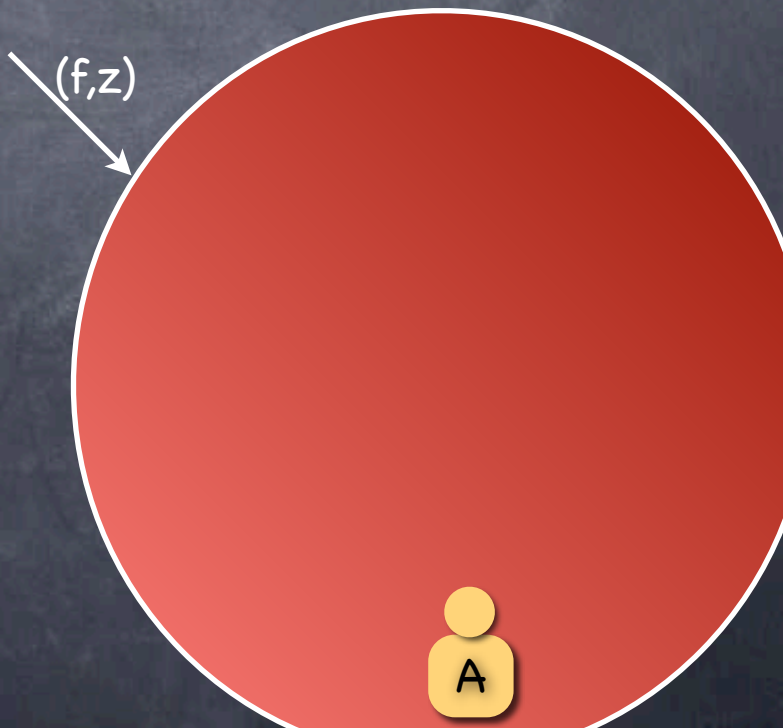

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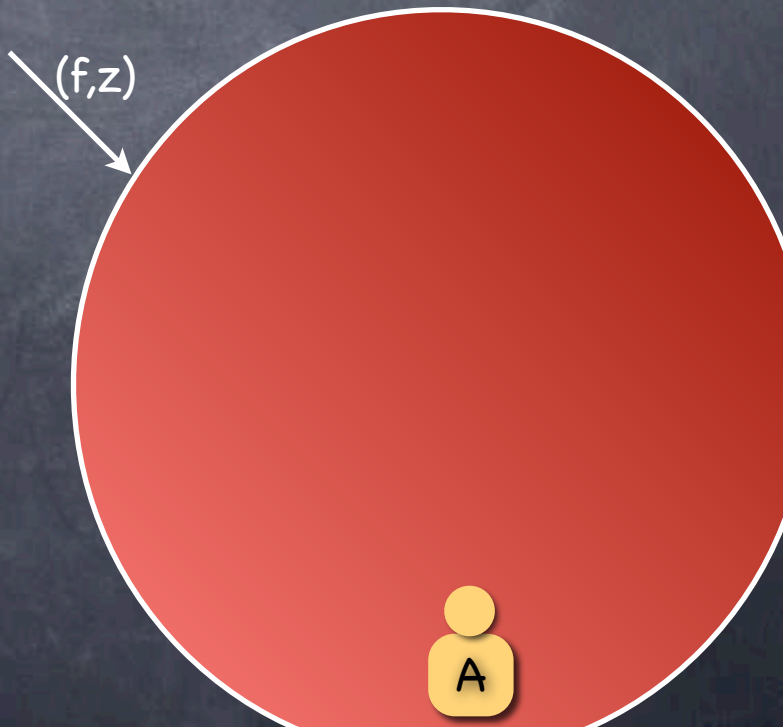

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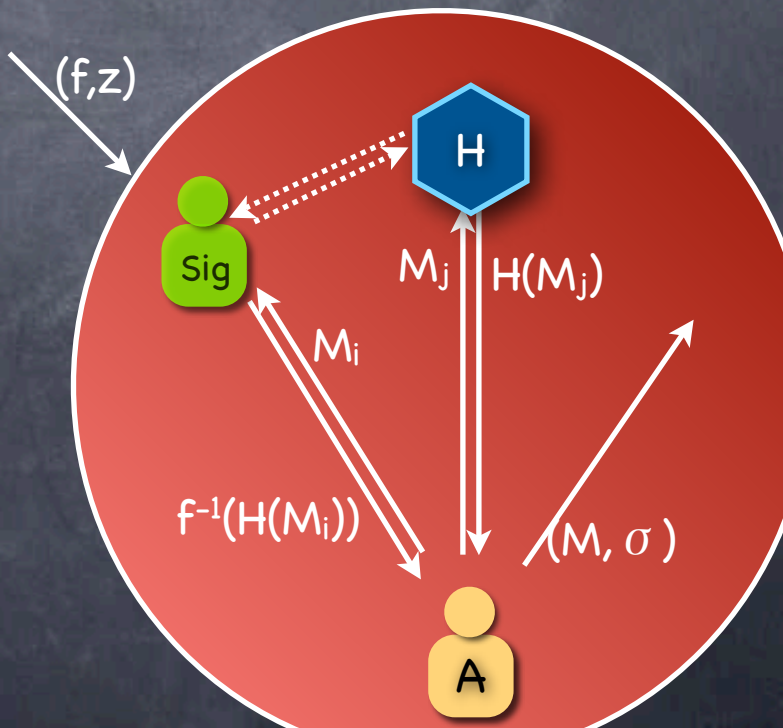

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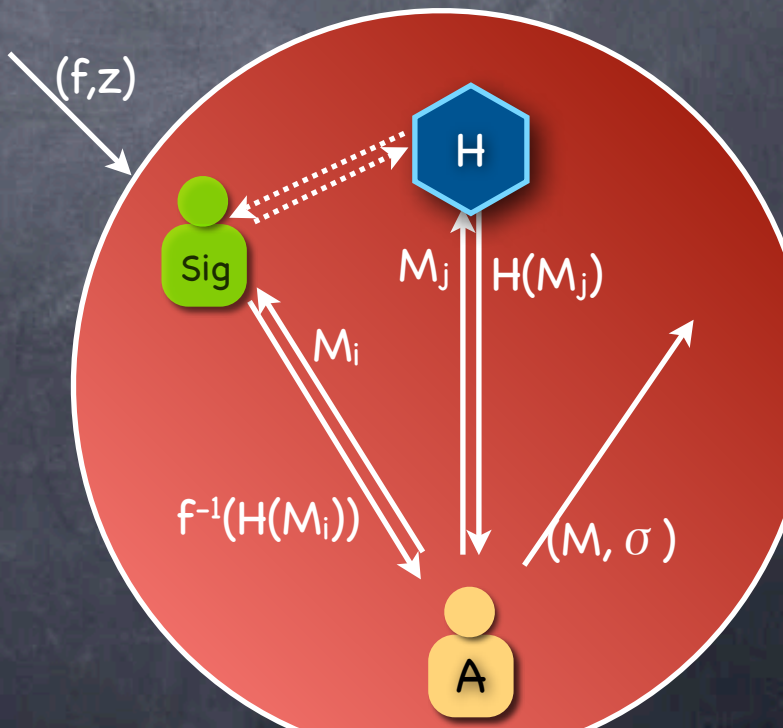

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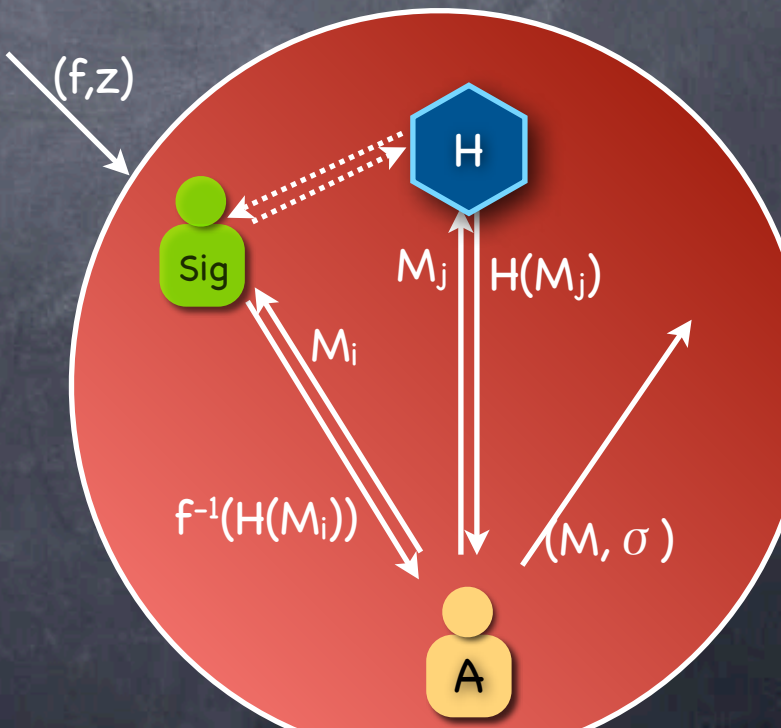

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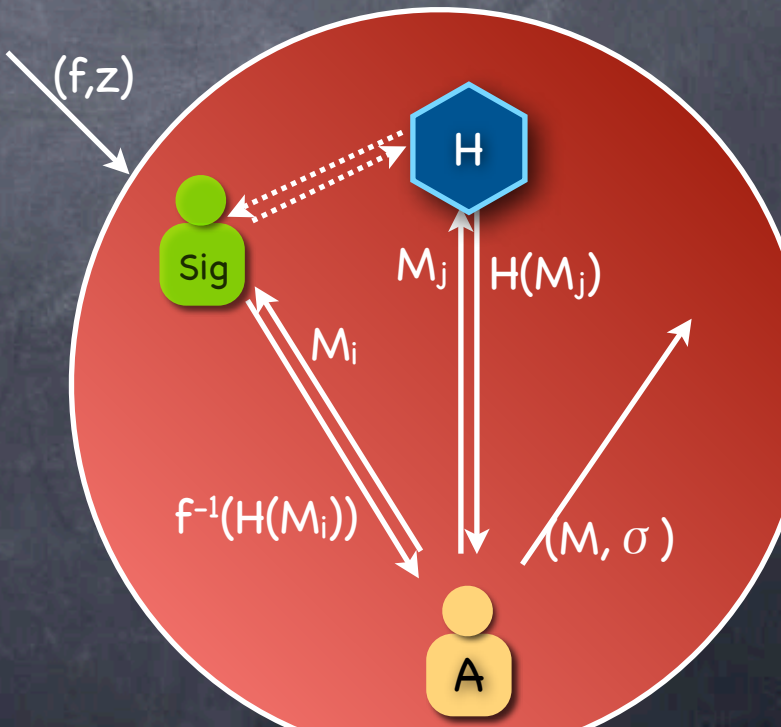

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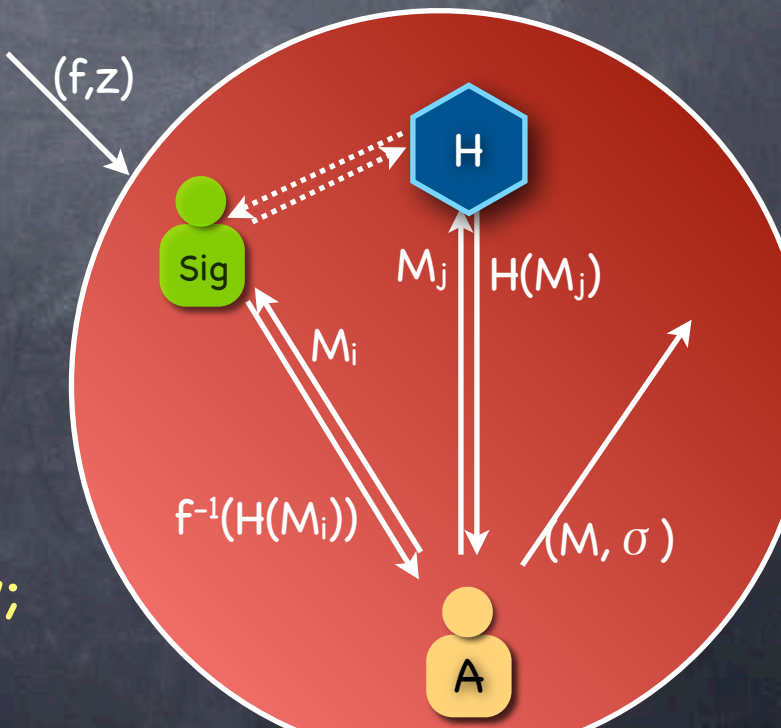

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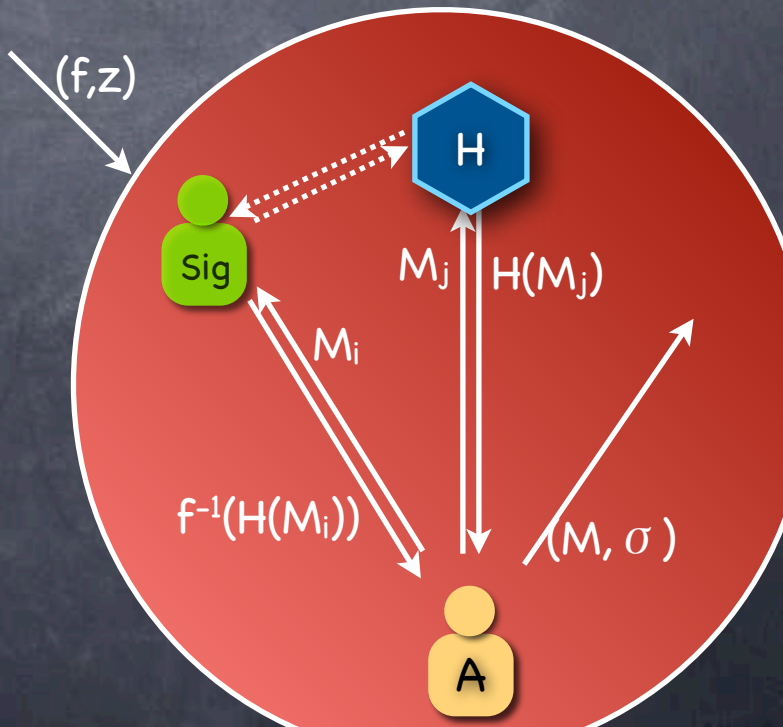

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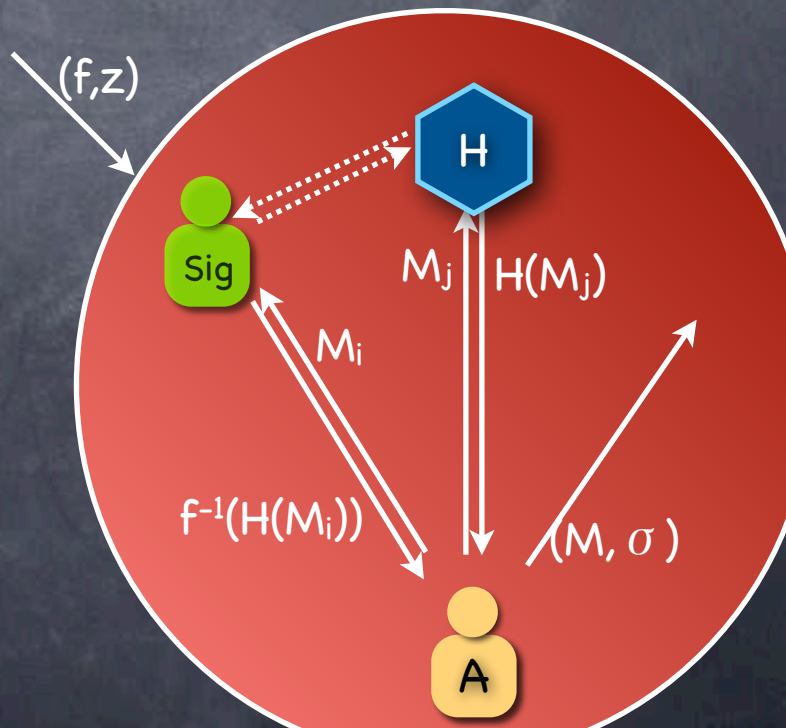

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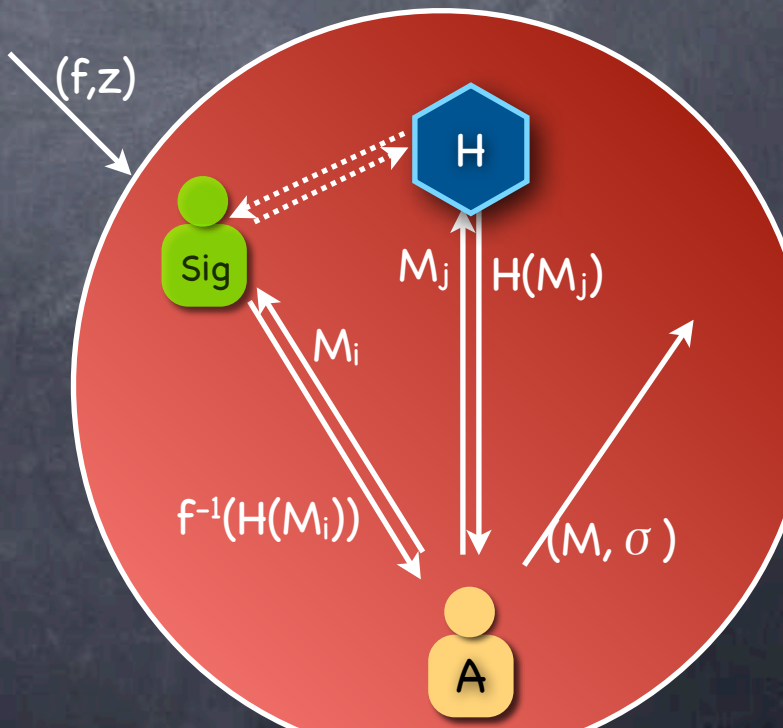

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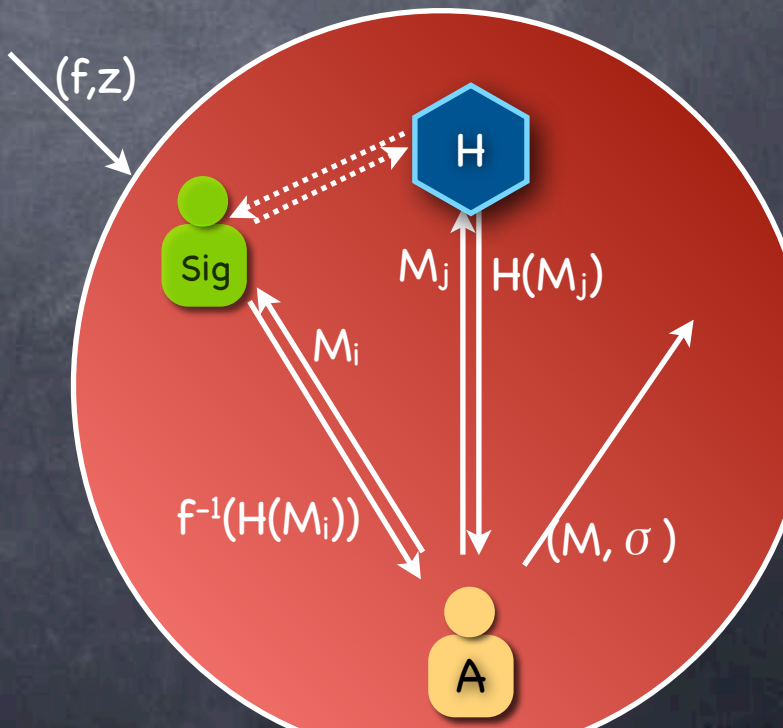

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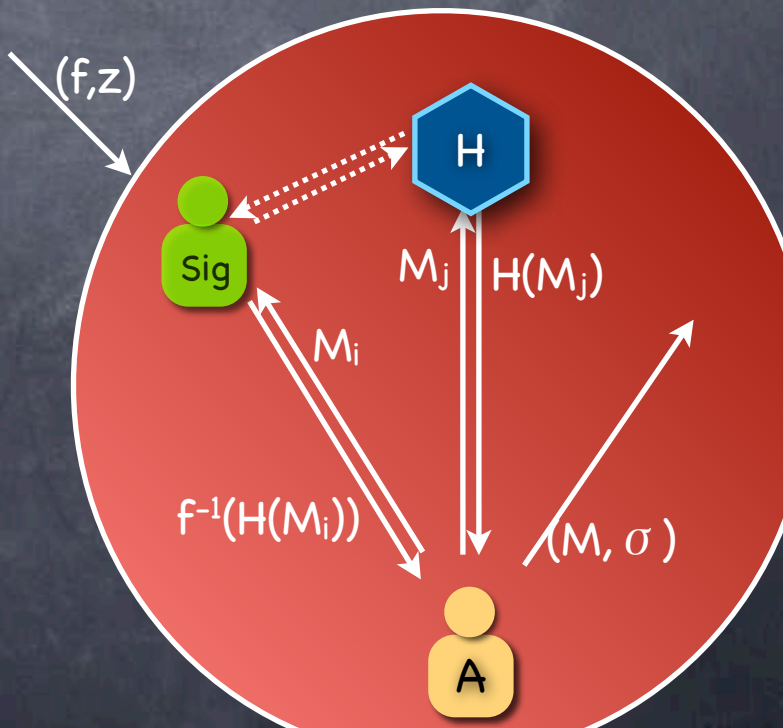

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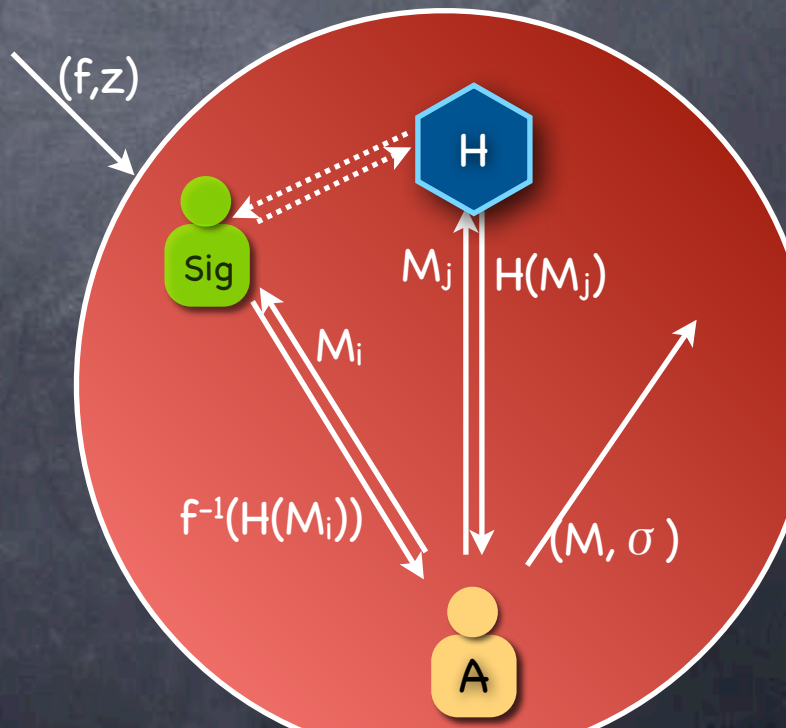

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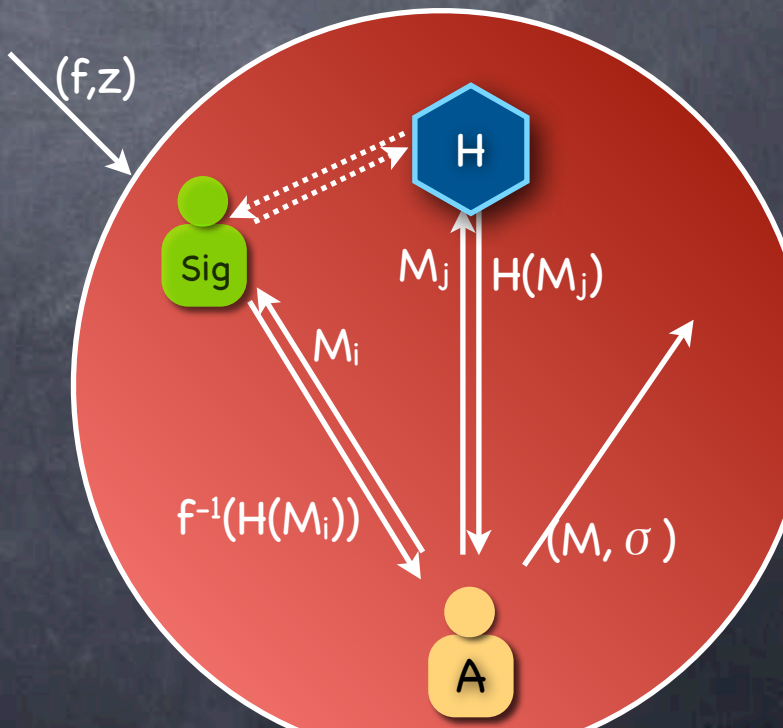

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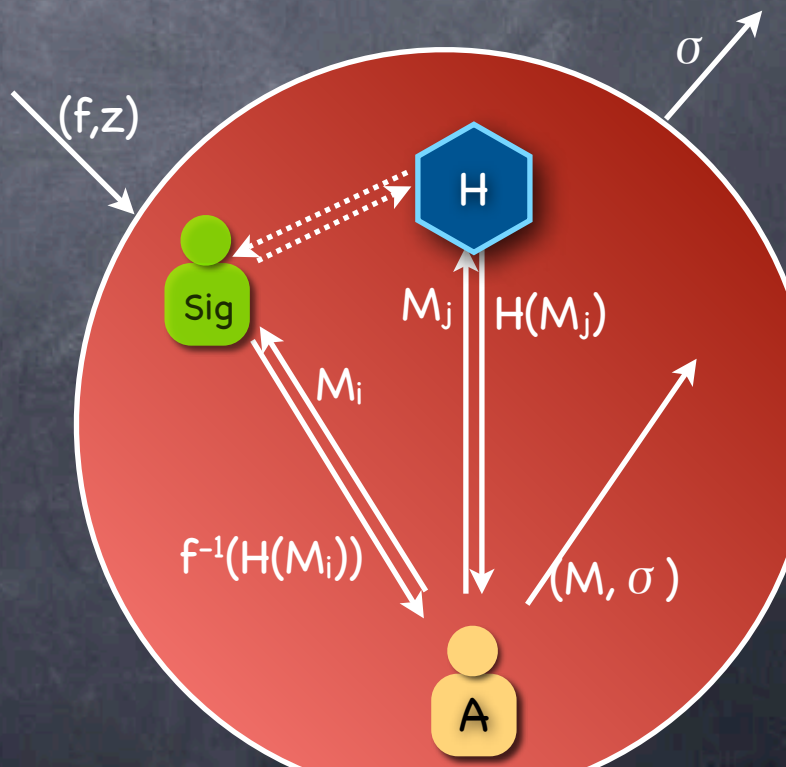

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- A general tool for purifying randomness: Randomness Extractor

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Secure Communication: Wrap-Up

We saw...

- Symmetric-Key Components
  - SKE, MAC
- Public-Key Components
  - PKE, Digital Signatures
- Building blocks: Block-ciphers (AES), Hash-functions (SHA-3), Trapdoor PRG/OWP for PKE (e.g., DDH, RSA) and Random Oracle heuristics (in RSA-OAEP, RSA-PSS)
- Symmetric-Key primitives much faster than Public-Key ones
  - Hybrid Encryption gets best of both worlds

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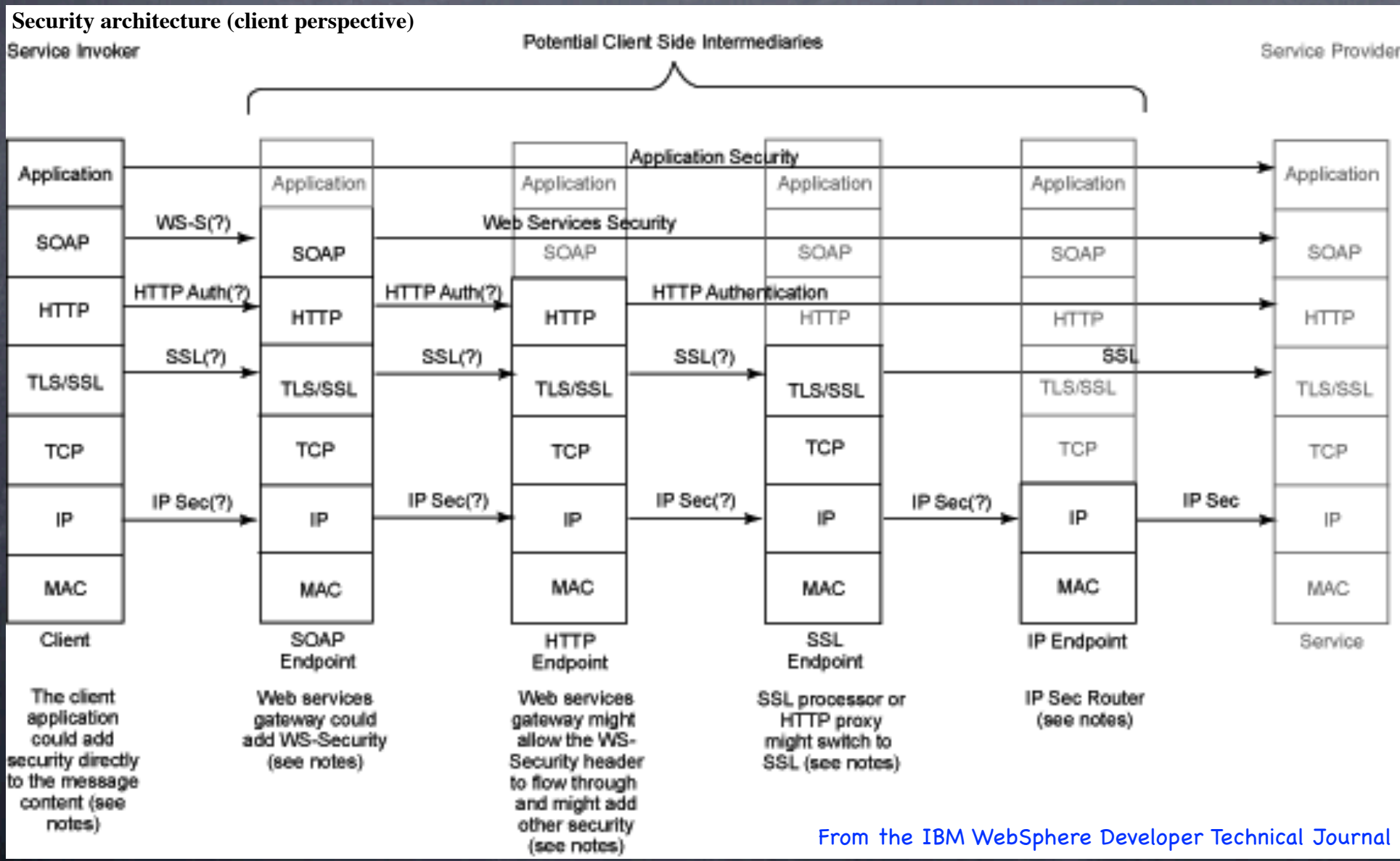
  - e.g.: SSL/TLS (used in https), IPSec (in the "network layer")

Security Architectures
(An example)



From the IBM WebSphere Developer Technical Journal

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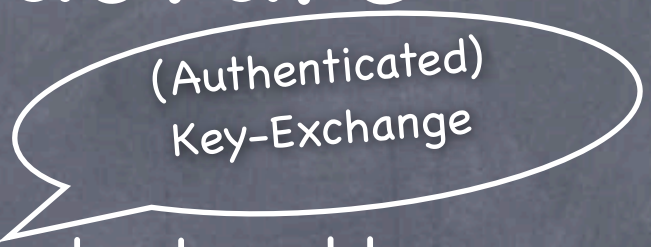

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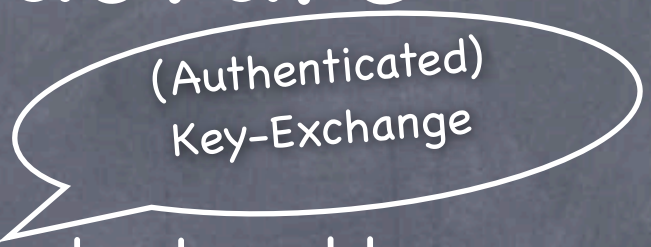

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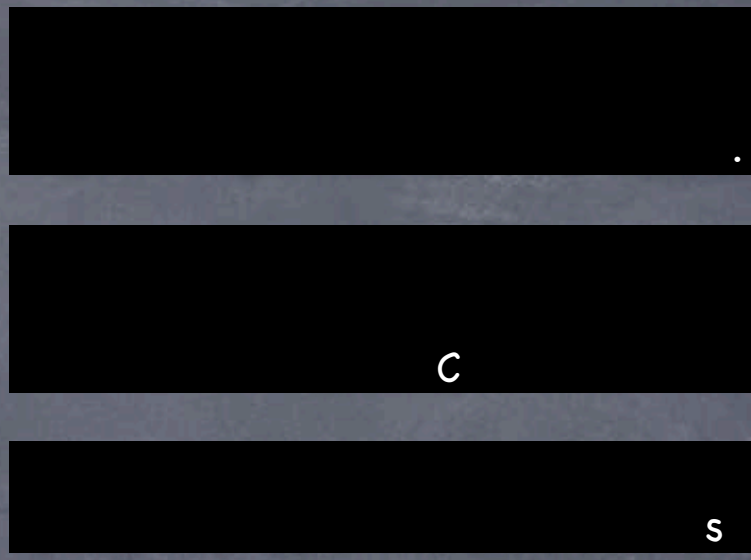

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