Capsule: A Protocol for Secure Collaborative Document Editing

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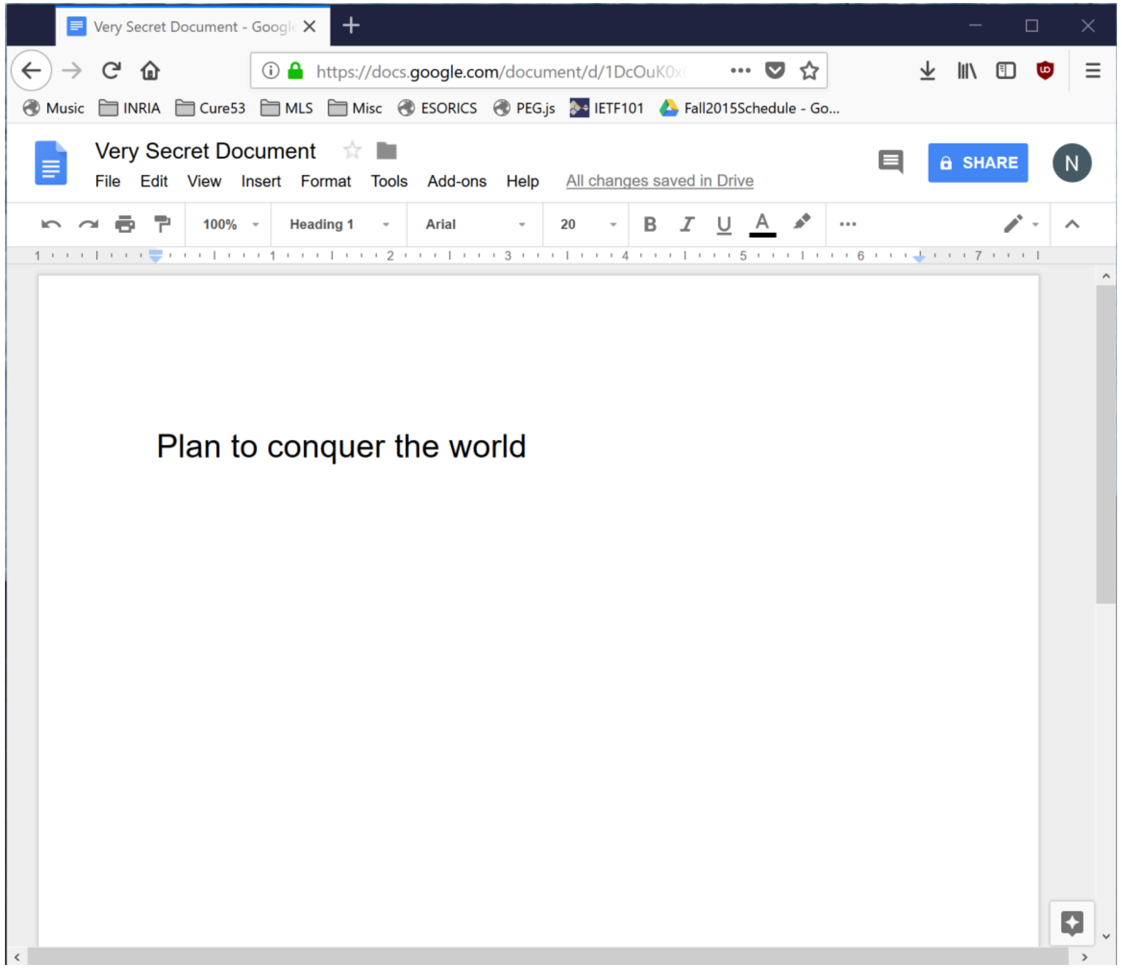
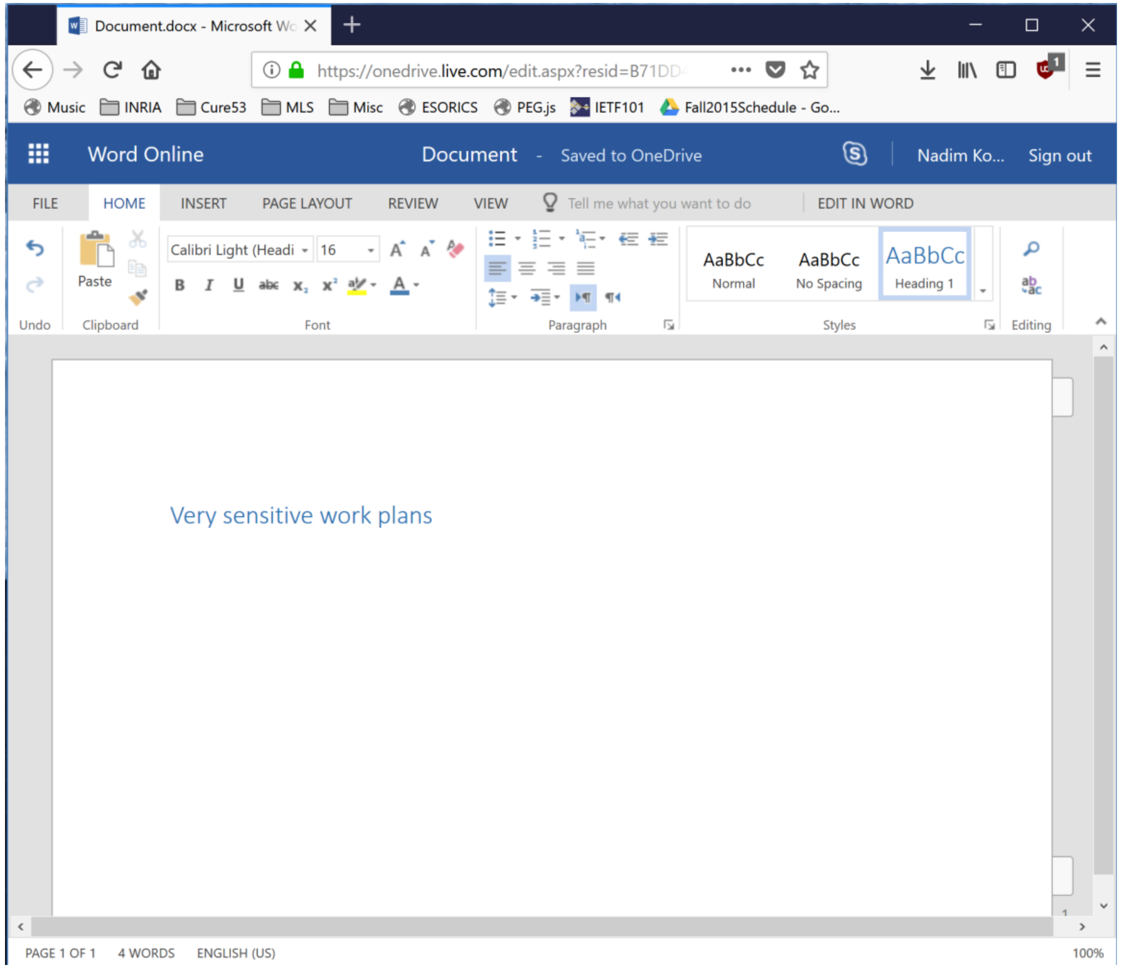


Plan to conquer the world



Very sensitive work plans

Capsule: Security Goals

- Participant List Integrity.
- Confidentiality.
- Integrity.
- Authentication.
- Transcript Consistency.

Capsule: Simple, Elegant Protocol

- Document is a *hash chain of diffs*.
- Access to document is obtained by sharing a simple ID.
- Users must prove knowledge of ID to participate in document.
- Primitives:
  - BLAKE2 for symmetric operations.
  - Ed25519 for signatures.

Capsule: Formally Verified

Protocol Level

- Formally verified with ProVerif.
- Hand proof.

Implementation Level:

- HACL-WASM: First software to use HACL* in WebAssembly.
- Functional correctness, secure memory, no side channels.

Capsule: Amazing!

- An open standard that anyone can use.
- Learn more: https://symbolic.software/capsule/
- ePrint paper: https://eprint.iacr.org/2018/253