



Secure Collaboration on Engineering Documents



Agenda

Background

Critical issues in secure engineering collaboration

- Accuracy / Performance
- Usability
- Security

Where are we today?

What's next?

Questions

Background: PDFTron

We provide Document Processing Technology building blocks

We work with many AEC (Architecture, Engineering, Construction) players



Background: Why is secure document collaboration important in AEC?



Documents

Drawings
Checklists



Collaboration

Engineering docs in the field
Forms-based workflows



Security in AEC

Leaks

Previous talk by PDFTron

Collaborating with PDF

PDF Day 2015

- What's changed?
 - Moving away from email/file-sharing
 - Moving toward centralized solutions
- Focus today
 - Centralized solutions
 - Challenges in AEC

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- **Accuracy / Performance**
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Where are we today?

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Questions

Accuracy / Performance

How long until I can view?

- Complex docs can take time to render
- Entire doc may need to be downloaded before viewing
- 50 MB, or more, not uncommon
- Document conversion may be needed



Accuracy / Performance (cont.)

Is the document rendered correctly?

- Missing or misplaced elements
- Estimate materials wrong
- Build incorrectly

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Accuracy / Performance (cont.)

Can I zoom in and see details clearly?

- Over-optimized scanned document
- Vector data blurry at too low a resolution



Accuracy / Performance (cont.)

Can I view even if internet is spotty or down?

- Many construction sites lack reliable service
- Not every solution brings the document offline
- Server-side rendering

Accuracy / Performance (cont.)

Can I edit documents offline?

- May need to fill out forms
- Site workers filling out inspection checklist
- Two users may edit simultaneously offline
- What happens if these conflict?

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Usability

Can the user interface be customized?

- Not all on-site workers are tech savvy
- Too many annotation types are confusing



Usability (cont.)

Can custom annotations be created?

- Stamps of specialized engineering symbols (e.g., hazard)
- Support for takeoff (measurement for materials estimation)

**Radiation Danger
High Level Sources**



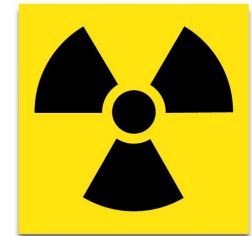
Biohazard



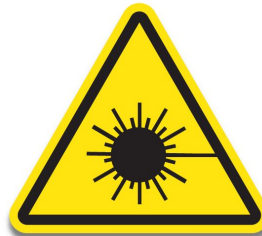
**Non-Ionizing
Radiation**



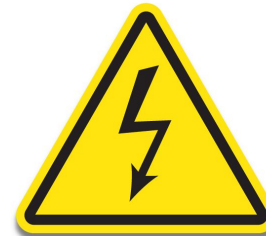
**Ionizing
Radiation**



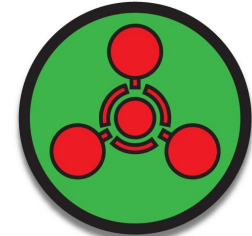
Warning Sign



Laser Hazard



High Voltage

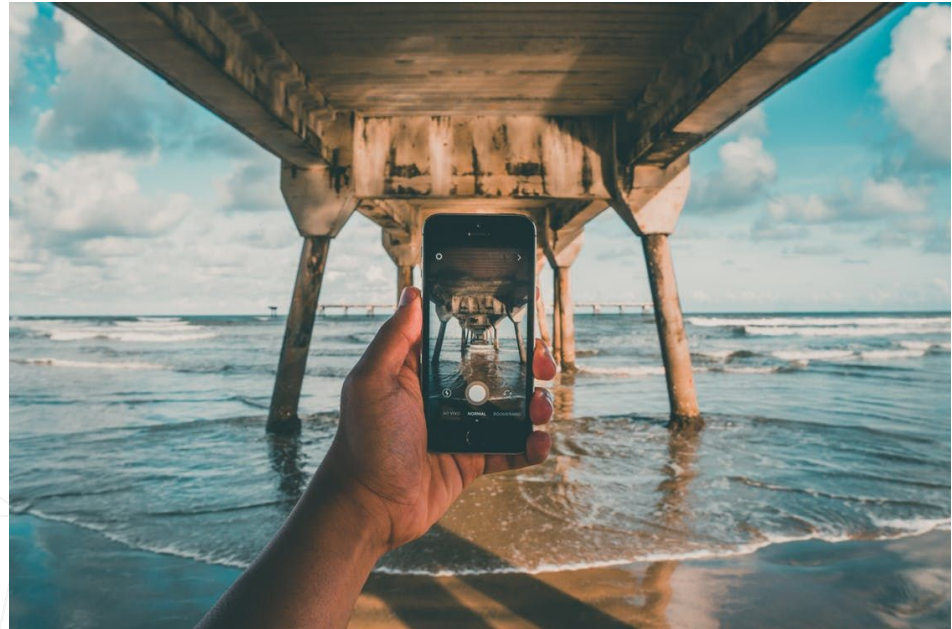


Chemical Weapon

Usability (cont.)

Can I integrate annotations into my existing workflow?

- Track defects with photo annotations
- Adding one creates a new task
- Forms checkbox closes a task



Usability (cont.)

Can I integrate my existing document management?

- Store the same document twice?
- Convert before viewing?

Usability (cont.)

What happens if there are two copies of the same document?

- Always happens when edits are saved into the document itself

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Security

How can I keep information from being leaked?

- Documents may be confidential
- Users might share documents they've downloaded
- Users might take screenshots



Security (cont.)

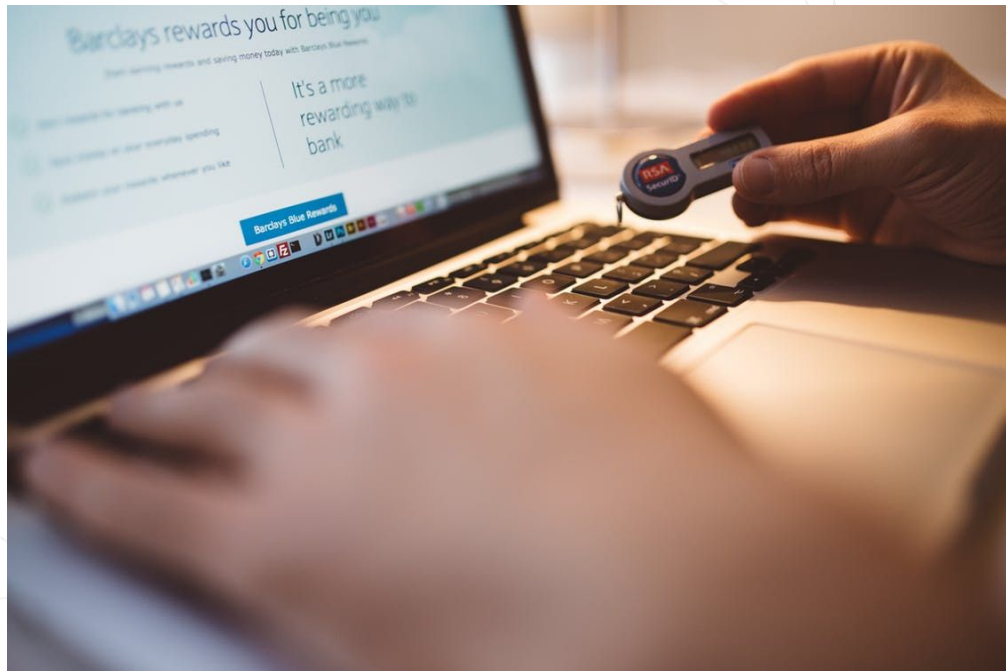
How can I keep outsiders from that info?

- Documents stolen from the client device
- Reading content while in transit

Security (cont.)

How can I integrate with existing security?

- DRM / Biometrics / MDM
- Custom encryption



Where are we today?



Industry
has made
progress



Some things are better
Centralized documents



Some tradeoffs
Loading time vs. Fidelity
Security vs. Offline usage

What's next?

- Addressing these tradeoffs will likely prove highly difficult & complex
- Constellation of new technologies will help
 - WebAssembly
 - Streaming
 - Optimization
 - Container/scaling technologies
- Hybrid techniques tailor to different devices / clients

Questions?



Thank you!

PDFTRON

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