

DRM Overview

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Automation Conference
NIST Gaithersburg, MD

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Security Solutions & Strategy
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Hollywood DRM vs. Government DRM

Studio Content



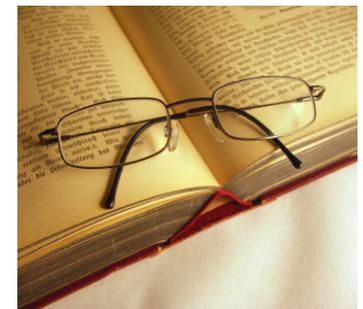
Hackers

Espionage

Secrets

Privacy

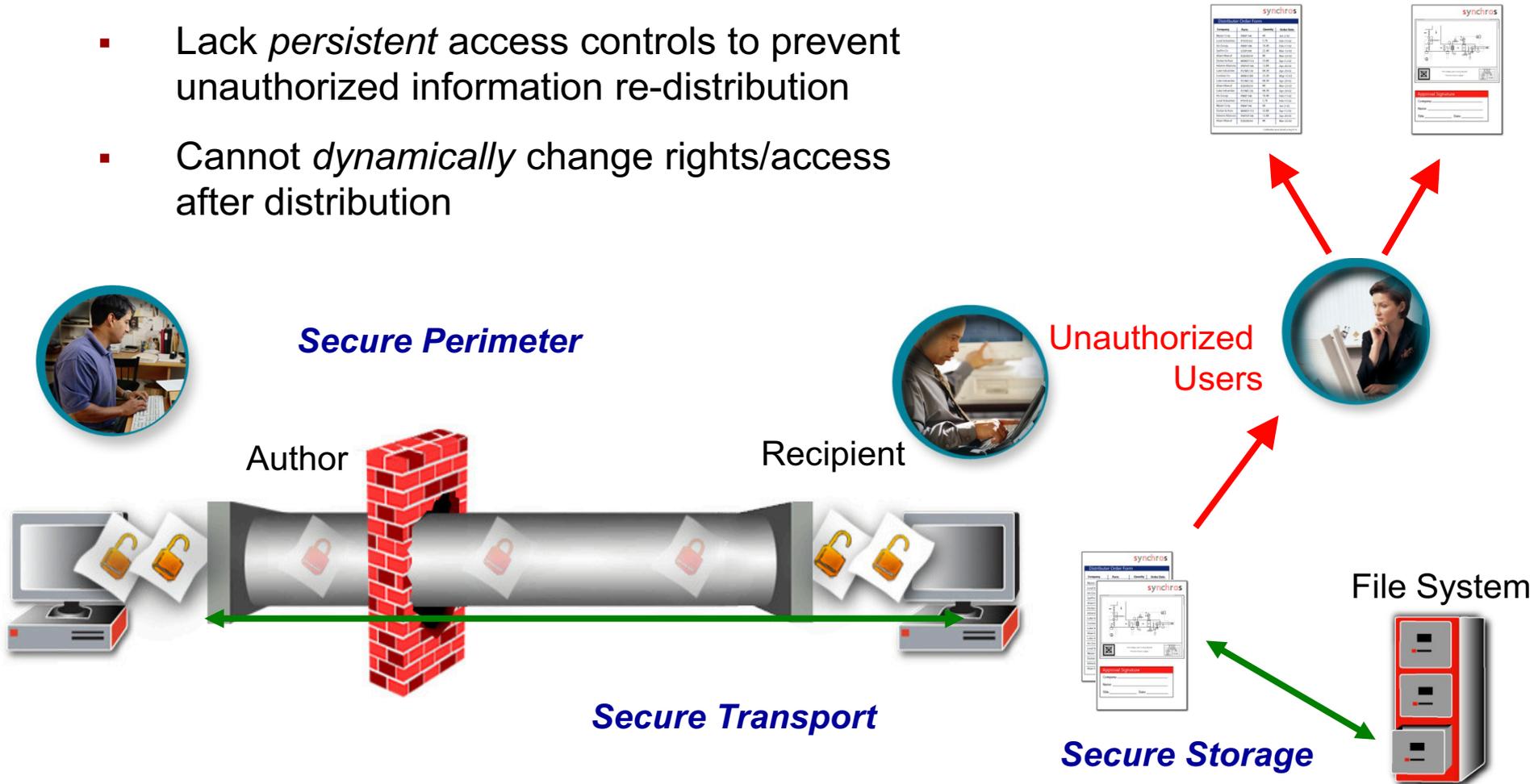
Regulation



Government Content

Issues For Many Information Assurance Approaches

- Lack *persistent* access controls to prevent unauthorized information re-distribution
- Cannot *dynamically* change rights/access after distribution



Security and Usability: It's not a tradeoff.

Rights Management Can Facilitate:

- More secure sharing
- Key management
- Automation of protection
- Auditing
- Security persistence →



Independent of storage and transport



- Not really DRM.
- Sensitive content is wrapped in a container file type (e.g. zip, pgp)
- That file is encrypted with a password in that external application
- Recipient types in password, unencrypted and unprotected files are removed

Once decrypted, unprotected content can be accidentally or maliciously redistributed



- Native file is encrypted in native application
- RC4/AES encryption based on a shared password
- Permissions disable print, modify, clipboard
- Those permissions are the same for all recipients
- Recipient receives file, enters password, interacts with protected content

Shared passwords aren't secure enough



- Native file is encrypted in native application
- RC4/AES encryption using PKI and directory
- Permissions disable print, modify, clipboard
- Each addressed recipient may have different permissions associated with their public key
- Recipient receives file, decrypts w/ private key, interacts with protected content with their individualized permissions

Limited permissions aren't mapped to a cross-application policy and cannot be dynamically managed inside/outside an organization



- Native file is encrypted in native application
- AES encryption managed through webservice to a rights management server
- Server is connected to internal and external directories of users and groups
- Server maintains list of policies that map users and groups to permissions
- Sender or automated process specifies policy by name to encrypt
- Recipient authenticates to rights management server to decrypt file and interact with the protected content based on the policy permissions
- Recipient actions can be audited

Today's Rights Management features

- **Directories:**
 - LDAP
 - AD (including DL- and ORG- Exchange mailing lists)
 - Custom
- **Permissions:**
 - Open
 - Print
 - Modify
 - Clipboard
- **Additional controls:**
 - Expiration (absolute, relative, immediate revocation)
 - Version Control
 - Change policy on existing documents
 - Watermarking
 - Online/Offline
 - Auditing
- **Ad-hoc and structured processes**
 - User initiated on desktop
 - Mapped to ECM/PLM system
 - Built into workflow process

Sample Policy Management

LiveCycle Rights Management ES - Windows Internet Explorer

ADOBE® LIVECYCLE® ES Help Options About Logout (Kel Varsen)

Home > My Policies > Policy Detail

Policy Detail

Delete Copy Edit

Name: Government Agency PII

Document Expiration Date: None

Owner: Kel Varsen

Auto-Offline lease period: 30 days

Description: Restricts access to approved personnel.

Audit document: Yes

Policy ID: 0E5CEA7B-B8A5-121D-E8D4-929CB17A8E0B

Modified Date: September 17, 2008 1:14:57 PM GMT-07:00

Status: Active

Watermark: Confidential

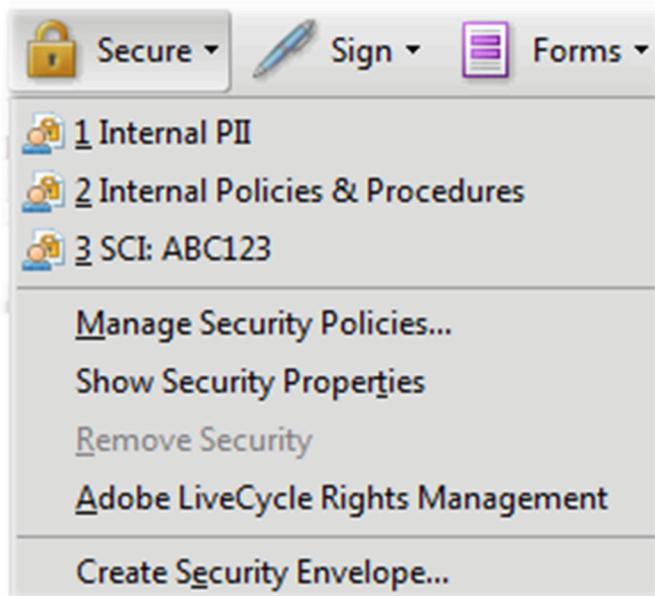
Encryption algorithm and key size: AES 128-bit

Access denied error message:

Name	Change	Copy	Print	Offline
Document Publisher	✓			
 Department Classified Personnel	✓			
 External Auditors				
 Regular Employees				

4 items

Applying DRM to applications on the desktop

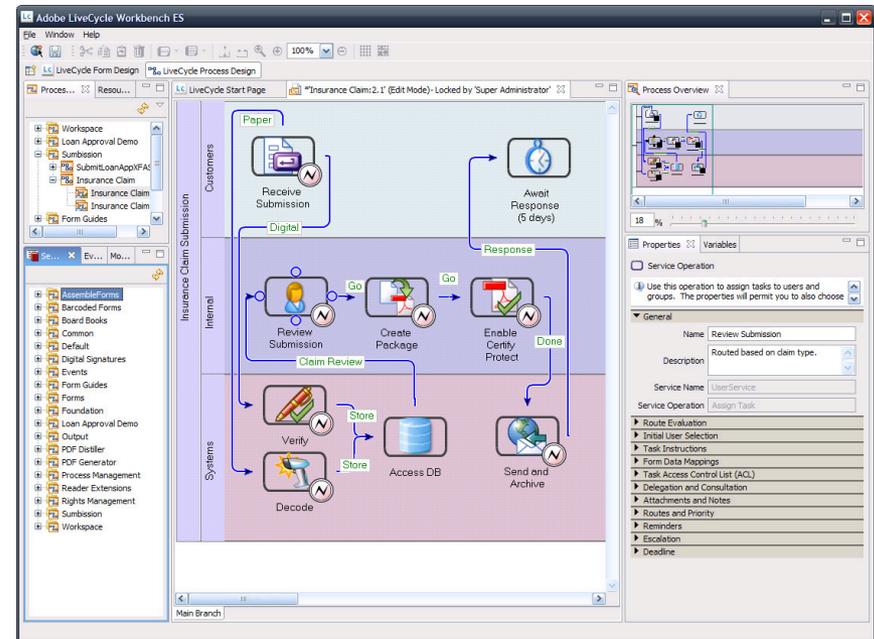
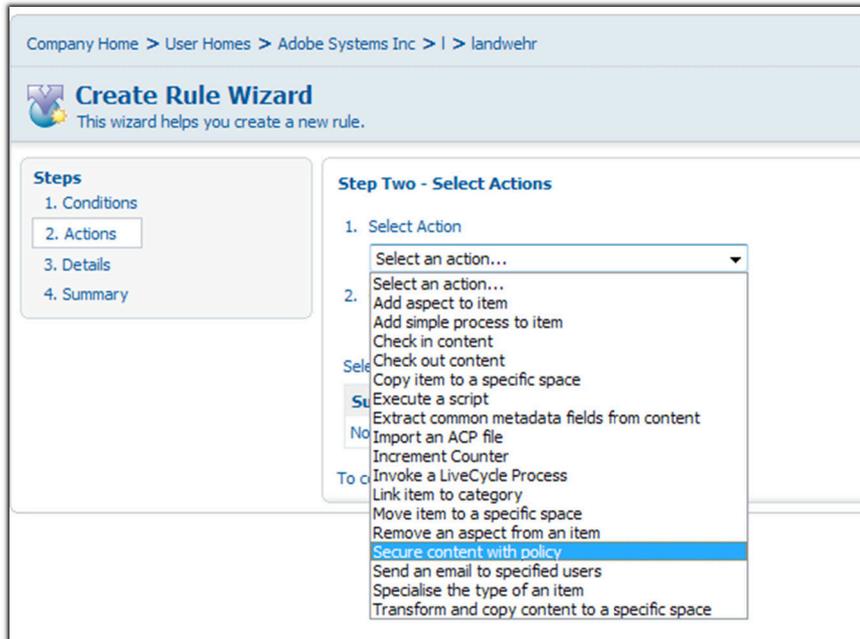


Two clicks to apply policy

Those policies can be

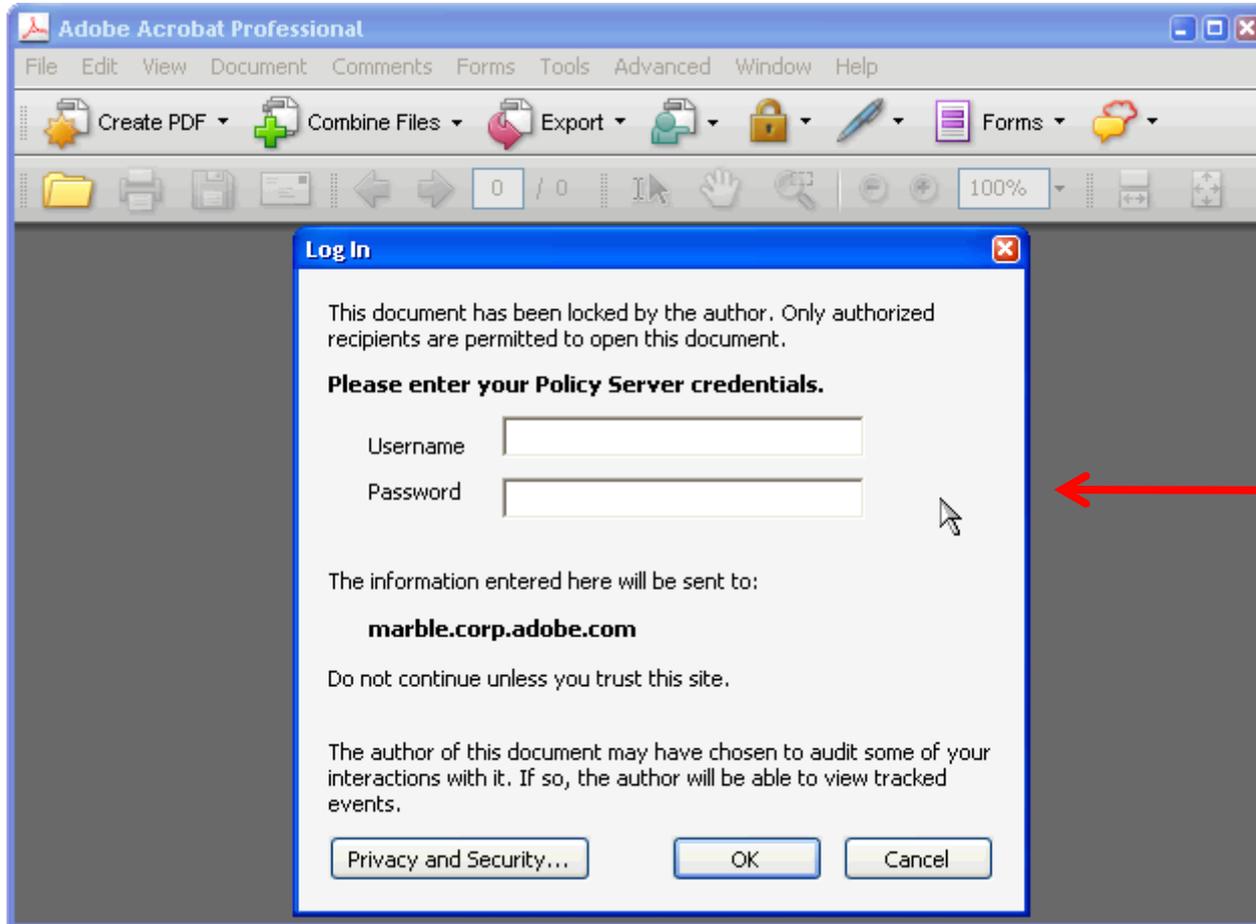
- Organization-wide
- Workgroup
- Personal

Apply DRM in an Automated Process



Policies can be applied through content management systems and electronic document workflows

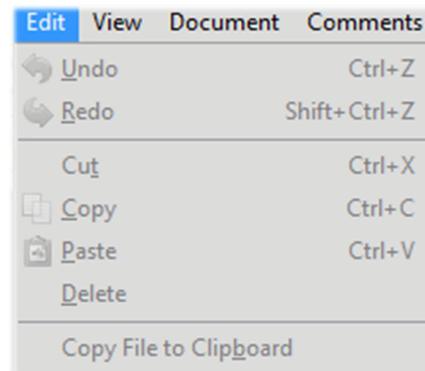
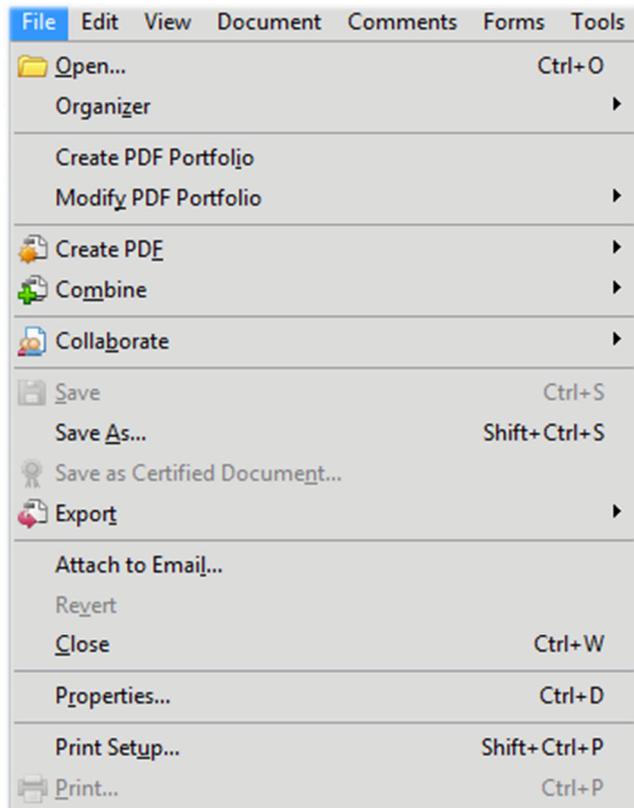
In DRM: Authentication is tied to document opening



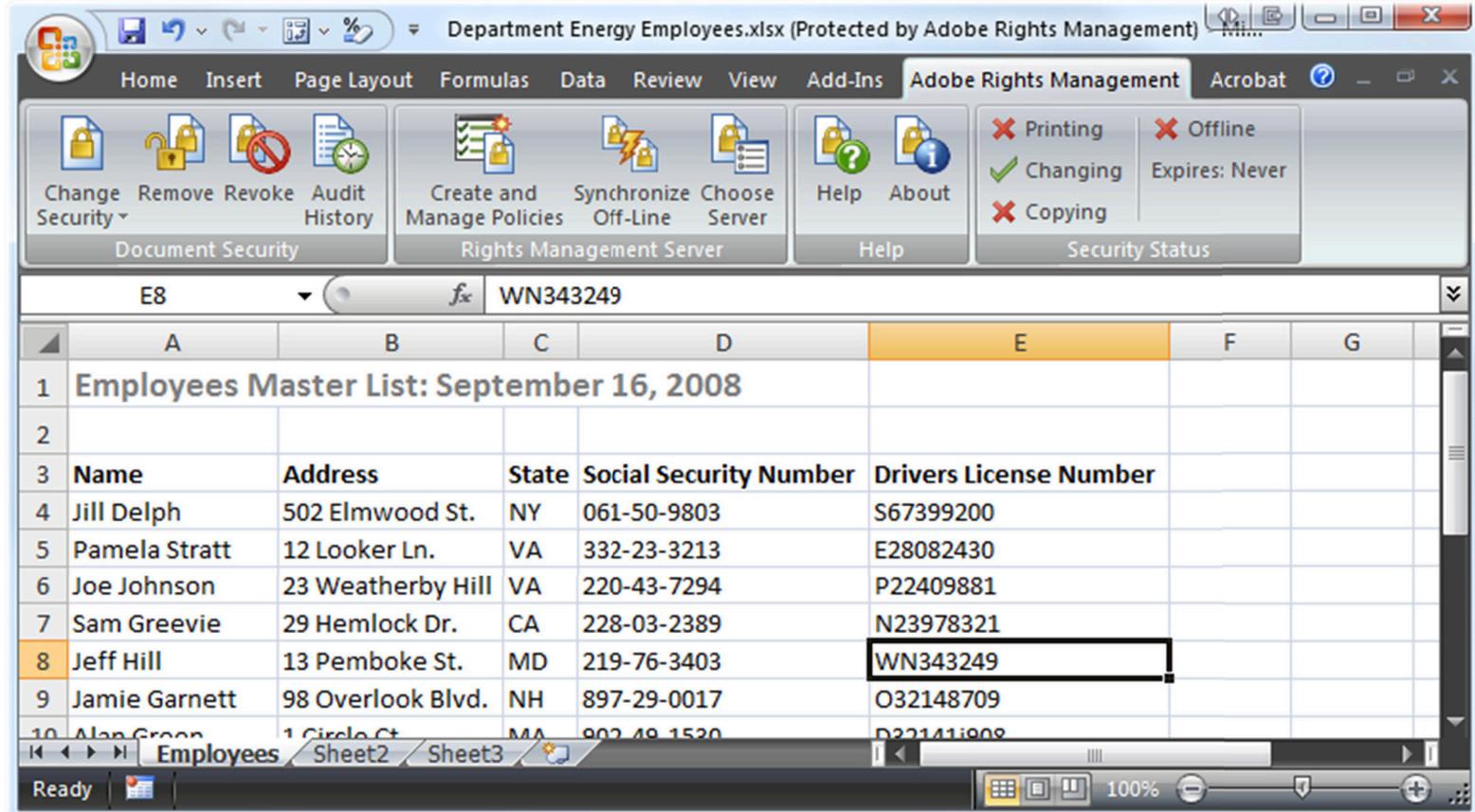
Common authentication options:

- Username+password
- Username+OTP
- Kerberos SSO
- PIV/CAC PKI

DRM Preventative Control Permission Enforcement



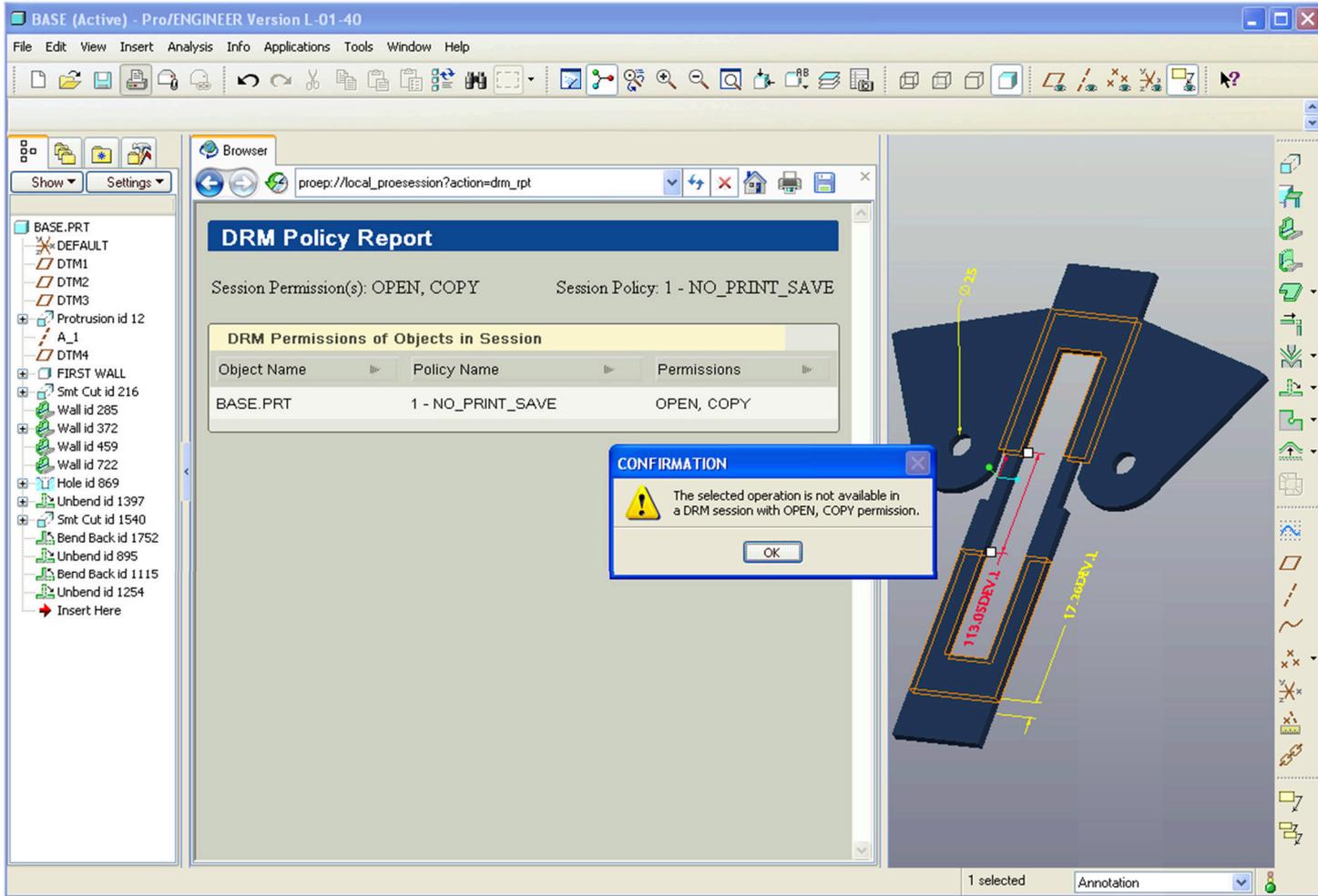
DRM Protecting native formats



The screenshot shows the Microsoft Excel interface with the file "Department Energy Employees.xlsx (Protected by Adobe Rights Management)". The ribbon is set to "Adobe Rights Management". A red arrow points to the "Change Security" button in the "Document Security" group. The "Security Status" group shows that printing, copying, and offline access are disabled, while changing is allowed. The spreadsheet data is as follows:

	A	B	C	D	E	F	G
1	Employees Master List: September 16, 2008						
2							
3	Name	Address	State	Social Security Number	Drivers License Number		
4	Jill Delph	502 Elmwood St.	NY	061-50-9803	S67399200		
5	Pamela Stratt	12 Looker Ln.	VA	332-23-3213	E28082430		
6	Joe Johnson	23 Weatherby Hill	VA	220-43-7294	P22409881		
7	Sam Greevie	29 Hemlock Dr.	CA	228-03-2389	N23978321		
8	Jeff Hill	13 Pemboke St.	MD	219-76-3403	WN343249		
9	Jamie Garnett	98 Overlook Blvd.	NH	897-29-0017	O32148709		
10	Alan Green	1 Circle St	MA	902-49-1520	D221411909		

DRM protecting CAD files



Video DRM

The screenshot displays an Adobe Connect meeting window titled "Hosting a Connect Meeting". The interface includes a top menu bar with "Meeting", "Present", "Layouts", "Pods", and "Help". Below the menu is a "Camera and Voice" section with five video thumbnails of participants: Peter Ryce, Maj. Sean Wheeler, CAPT Ron Davis, SGM Colin Wardlaw, and Maj. Bernice Brown. The main content area, titled "Captain's Call", features a presentation slide for a "Safety Briefing" from the Department of the Navy and the Naval Safety Center. The slide includes the text "0800 - 0930 All Hands" and "Naval Flight Operations Quality Assurance Human Factors Agenda". The agenda items are: What are Human Factors, Human Factor Categories, Safety Incidents, Fleet Readiness, Future Efforts, and Knowledge Exam. To the right of the slide is a "Caption's Call" sidebar with a search bar and a list of slides (Slide 1 to Slide 4) with their durations. At the bottom of the meeting window are controls for "Share", "Stop Sharing", "Full screen", "Sync", and "0 Minutes 50 Seconds Remaining". On the right side of the meeting window, there are several panels: "Attendee List (1)" showing "CAPT Ron Davis", "Chat" with a message about attendance, "File Share" with a table of files, and a "Note" about a mandatory safety exam.

Name	Size
Annual Safety TNG Gu	30 KB
Flight Ops Safety SOP	53 KB
Captains Call Minutes	2126 KB

Note: Mandatory Safety Exam
All personnel will be required to take the Safety Knowledge Examination post briefing.
This briefing is located at <https://connect.navalops.navy.mil/safetyexam07>

Not just for consumers watching movies and TV shows from the studios.

Policy protection for:

- Recorded meetings
- Online training
- Surveillance footage

Detective Controls through Dynamic Watermarking

CORPORATE OVERVIEW

ADOBE SYSTEMS INCORPORATED
Headquarters
San Jose, California
www.adobe.com

FOUNDED
1982

STOCK SYMBOL
ADOE (Nasdaq)

ADOBE RECAL 2008 REVENUES
US\$2,575 billion (FY Dec. 1, 2008)

More than 90% of creative professionals have Adobe Photoshop on their desktops.

Over 250 million PDF files exist on the web.¹

The world's top 10 PC manufacturers ship their systems with PDF technology pre-installed.

Adobe revolutionizes how the world engages with ideas and information. For 25 years, the company's award-winning software and technologies have redefined business, entertainment, and personal communications by setting new standards for producing and delivering content that engages people virtually anywhere at anytime. From rich images in print, video, and film to dynamic digital content for a variety of media, the impact of Adobe solutions is evident across industries and felt by anyone who creates, views, and interacts with information. With a reputation for excellence and a portfolio of many of the most respected and recognizable software brands, Adobe is one of the world's largest and most diversified software companies.

History of Innovation

Adobe founders Chuck Gaschke and John Warnock shared a vision for publishing and graphic arts that would forever change how people create and engage with information. The two men met in the late 1960s while working at the renowned Xerox Palo Alto Research Center (PARC), where they researched device-independent graphic systems and printing. Excited by the potential of their work to reshape computing, Gaschke and Warnock eventually realized that the only way to take their ideas from the lab to the burgeoning technology market would be to create their own company.

In 1982, they founded Adobe Systems Incorporated on a simple premise: how could text and images on a computer screen translate beautifully and accurately into print? A year later, they helped launch the desktop publishing revolution by introducing Adobe® PostScript® technology, providing a radical new approach to printing text and images on paper. For the first time, a computer file could be printed exactly as it appeared on screen, with all formatting, graphics and fonts intact. Adobe PostScript was licensed to printer manufacturers worldwide and delivered unprecedented cost savings and productivity enhancements. It continues to be a core technology on printers today.

Setting Industry Standards

Building on its success with PostScript technology, Adobe expanded into desktop software applications with Adobe Illustrator® and Adobe Photoshop® software—and the design industry was never the same. These groundbreaking applications redefined the quality and complexity of images that could be created for print, and later extended those benefits to content created for video, film, web, and alternative computing devices. Adobe InDesign® software followed, shaking up the page layout market and enabling household-name magazines, newspapers, and corporate brands to adopt modern, integrated publishing workflows.

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From Desktop to Enterprise Solutions

As demand for digital content skyrocketed, Adobe solutions provided a catalyst for moving ideas from concept through creation to delivery across any digital device. The appointment of Bruce Chizen as Adobe's Chief Executive Officer in 2000 further strengthened the company's market leadership, as Adobe delivered on strategies to move from a desktop software company to a platform provider for enterprise. With

John Doe | joe Confidential 2008.01.02 15:24:49 -08'00'

Edit Watermark

Please select your watermark type and alignment options.

* Name:
Watermark Examples Max. 50 characters

* Watermark type:
 User Name
 User ID
 Current Date
 Custom Text: Confidential Max. 100 characters

Use as background:
 Yes
 No

Vertical alignment:
Bottom

Horizontal alignment:
Center

Scale:
 %
 Fit to page

* Rotation:
0 degrees

* Opacity:
50 %



More watermark options

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Really Obvious

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Very Subtle

DRM Summary

- Right management is content-centric security on native formats
 - documents, forms, media
- Protects information throughout its lifecycle
 - create -> collaborate -> archive -> destroy
- Maintains protection inside and across organizations
- Persistent protection
 - independent of storage and transport; online & offline
- Applied via ad-hoc and structured processes
- Only the intended recipients can interact with protected content

Adobe Initiatives Of Interest to Government



*LiveCycle
Rights
Management*



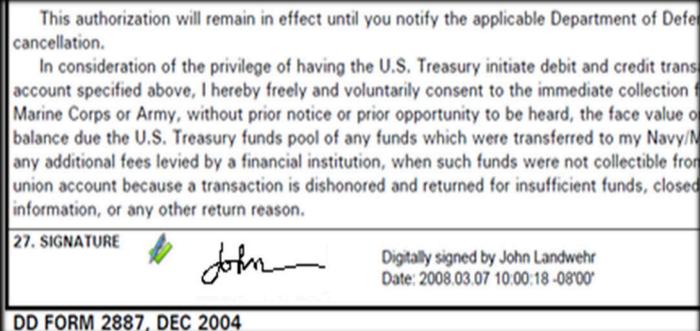
*Acrobat and Reader
JITC Certification*



*FIPS 140-2 modules
AES256 & SHA512
FDCC*



Certified Documents



Digital Signatures

Some governments have [redacted] and implement enrollment automation solutions. Most attempts, however, have automated the process only for specific individual services, so far very few have tackled the process of integrating information collection across multiple services. Instead, stand alone legacy applications are the norm, and ensuring privacy and data integrity remain concerns. In the few attempts to fully integrate to programs, the solutions have typically been built from [redacted] requiring large investments of both time and money.

*Redaction &
Sanitization*



*CAC & PIV
Support*

For more information:

<http://adobe.com/government>

<http://blogs.adobe.com/security>

John Landwehr: (408)536-6763; jlandwehr @ adobe