

International Seminar
DIGITAL RECORDS
AND LEGAL ADMISSIBILITY
2024



Mr. Hemant Prasad
Crest Infosolutions Sdn Bhd

**Emerging Technologies and Security of
Digital Records**

The background features a dark, textured wooden surface. On the left, a black smartphone is partially visible. In the center, a magnifying glass is positioned over the wood. On the right, there is an old, worn, brown leather-bound book with some pages visible. A green semi-transparent banner is overlaid across the middle of the image, containing the title and presenter information.

Emerging Technologies and Security of Records Management

Presented by
Hemant Prasad
Crest Infosolutions

*“Necessity is the mother of
all inventions”*

- PROVERB, UNKNOWN





1800 →

Once upon a time, this was the best possible way to manage Public Records.





1900 →

Then the amount of
Public Records
started growing.





2000 →

Which led to the
unimaginable
Records Chaos by
late 20th century



1800



1900



2000



Records growth has been phenomenal in the past century

New technologies have emerged to work with records.



Emerging Technologies for Managing and
Securing Digital Records

Emerging Technologies



ARTIFICIAL INTELLIGENCE (AI)



AUTOMATION



BLOCKCHAIN



DIGITAL SIGNATURE

ELECTRONIC RECORDS MANAGEMENT SYSTEM

THE BASE PLATFORM

The Platform →

An **Electronic**
Records
Management
System



An Electronic Records Management Platform



CAPTURE

Records from any source, any record type with metadata electronically.

MANAGE

Digital records securely, maintain integrity in an auditable manner.

DISSEMINATE

Records internally or to external recipients, assign tasks etc electronically.

DISPOSE

Records retention, transfer, destroy or legal hold electronically to meet compliance requirements.

ARCHIVE

Archive records for long-term preservation and to retain vital nation's memory in electronic manner.

Digital Document Management System (DDMS 2.0) for Govt. of Malaysia →

COMPLETE LIFECYCLE MANAGEMENT

DDMS 2.0 for Govt of Malaysia caters to end-to-end records lifecycle.

MULTI-TENANT PLATFORM

One-of-a-kind of platform in the world to cater to over 400 government agencies on a single platform.

COMPLIANCE TO REGULATIONS

DDMS 2.0 complies to MS ISO 16175, ISO 15489 and ISO 27001 standards.



DDMS 2.0
DIGITAL DOCUMENT MANAGEMENT SYSTEM

Management of government official records electronically according to life cycle starting from creation, storage, maintenance and disposal

- Compliance**
 - National Archive Act 2003
 - Official Secret Act 1972
 - MS-ISO 16175
 - MS-ISO/IEC 27001:2013
 - Service Circular No.5 of 2007
- Achievement**
 - 185 Agencies
 - 42,512 Users
 - 5.76 Million Records
- Recognition**
 - 2020 ITU WSS 2020 Champion (Enabling Environment)
 - 2019 CAPAM International Innovations Award Certificate Of Distinction
 - 2017 MSC Malaysia APCTA 2017 Awards - Final Judging - Best e-Government & Public Sector
- Features**
 - Audit Trail**: Record each transaction
 - Data Encryption**: Data-at-rest, Data-in-use & Data-in-motion
 - Access**: Anytime, Anywhere & Any Device
 - Record Search**: Advance Search, Quick Search & Accurate Search
 - Record Capture**: Upload, Scan & Add-in
 - Minute Order**: Read Status, Action Status, Warning Status
 - Report**: Department records officer and system administrator
 - Help Desk**: <https://helpdesk.ddms.malaysia.gov.my> Help Desk System - 24/7

<https://ddms.malaysia.gov.my/>

Digital Document Management System (DDMS 2.0) for Govt. of Malaysia →

OPEN SOURCE TECHNOLOGY STACK

DDMS 2.0 is based on Enterprise edition of Open Source platform, Alfresco.

CONTINUOUS INNOVATION

DDMS 2.0 has adopted a forward looking approach has been integrated with solutions like Digital Signature platform to continuously enhance platform capabilities.



Compliance

- National Archive Act 2003
- Official Secret Act 1972
- MS-ISO 15175
- MS-ISO/IEC 27001:2013
- Service Circular No.5 of 2007

Achievement

- 185 Agencies
- 42,512 Users
- 5.76 Million Records

Recognition

- 2020 ITU WSS 2020 Champion (Struggling Environment)
- 2019 CAPAM International Innovations Award Certificate Of Distinction
- 2017 MSC Malaysia APCTA 2017 Awards - Final Judging - Best in Government & Public Sector

Features

- Audit Trail (Record each transaction)
- Data Encryption (Data-at-rest, Data-in-use & Data-in-motion)
- Access (Any time, Anywhere & Any Device)
- Record Search (Advanced Search, Quick Search & Accurate Search)
- Record Capture (Upload, Scan & Add in)
- Minute Order (Read Status, Action Status Warning Status)
- Report (Department records officer and system administrator)
- Help Desk (https://helpdesk.ddms.malaysia.gov.my Help Desk System - 24/7)

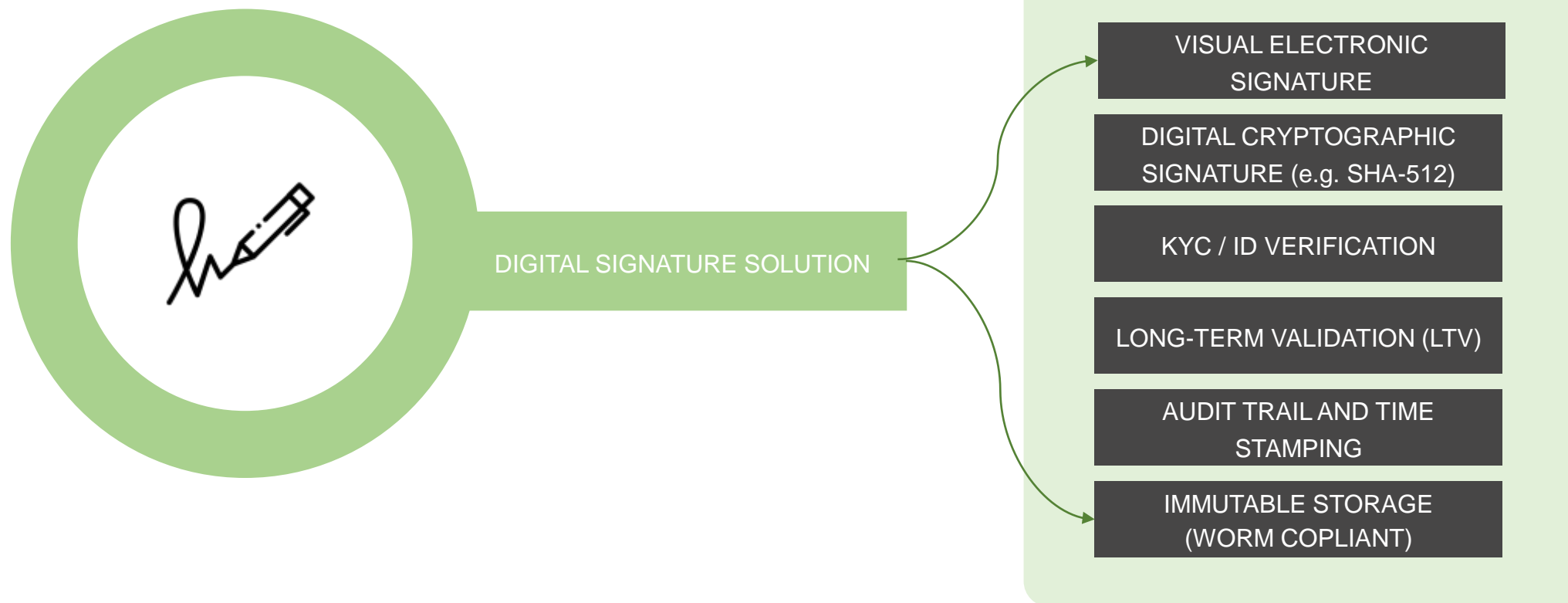
<https://ddms.malaysia.gov.my/>

Digital Signatures →

To **Digitalize**
Records
Creation and
Security



Digital Signatures →



Digital Signatures →

THE INDUSTRY COMPLIANCE



21 CFR Part 11 is a regulation by the U.S. FDA that sets criteria for electronic records and electronic signatures, ensuring they are trustworthy, reliable, and equivalent to paper records and handwritten signatures.

It covers system validation, audit trails, record retention, user access controls, and electronic signature standards.

Digital Signatures →

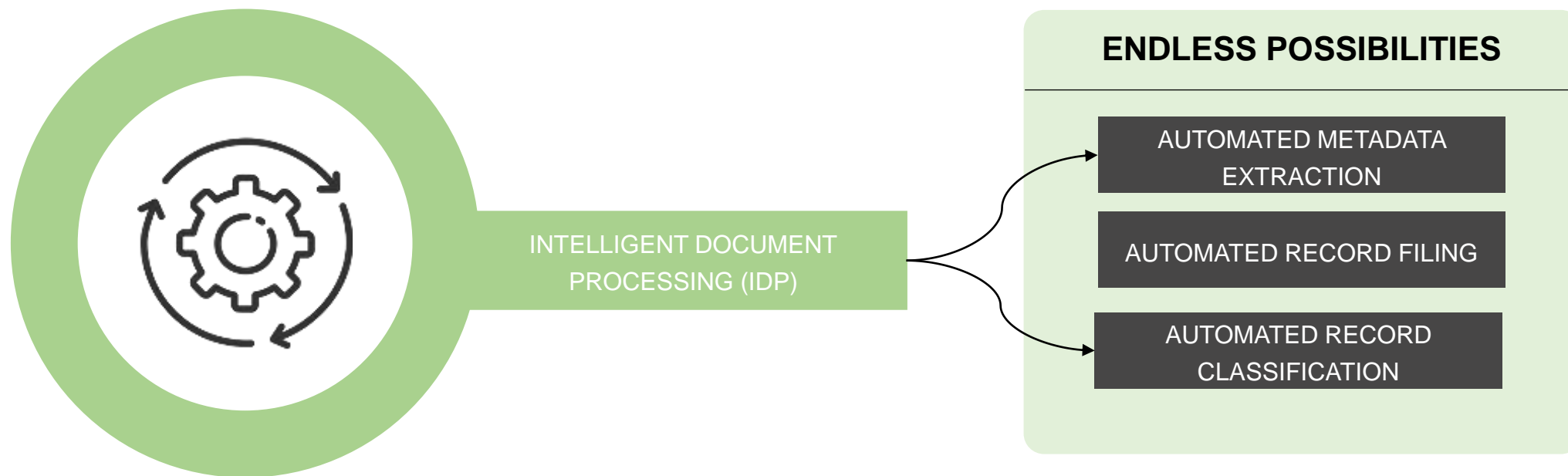
Metadata Category	Details
Signer's Identity	Full name, unique user ID or credentials
Date and Time Stamp	Exact date and time of signature, time zone information
Signature Meaning	Purpose of the signature (e.g., approval, review), context or reason for signing
Document Identification	Unique document identifier, version number or revision history
Signature Method	Technology or method used (e.g., digital certificate, biometric), cryptographic algorithm or encryption details
Authentication Data	Authentication method (e.g., password, MFA), authentication tokens or session data
Audit Trail Information	Reference to audit trail entry, logs of actions taken before, during, and after signing
Certification Authority Information	Details of Certificate Authority (CA), certificate serial number, validity period
System and Device Information	System or device identification, IP address, MAC address, or other device identifiers
Signature Status	Status of the signature (e.g., valid, invalid, revoked), signature verification checks and results

Automation →

To **Improve**
Records
Management
Practices



Automation for Records →



Automation for Records →

Intelligent Document Processing (IDP) is an advanced form of document automation that uses artificial intelligence (AI) technologies like machine learning, natural language processing (NLP), and computer vision to extract, classify, and validate data from documents.

Unlike traditional Optical Character Recognition (OCR), which merely converts images of text into machine-readable text, IDP adds layers of intelligence to understand context, recognize patterns, and automate workflows, making it more efficient and accurate in handling complex documents.

Key Points:

- ✓ Advanced AI Integration: Uses AI, machine learning, and NLP for enhanced data processing.
- ✓ Context Understanding: Recognizes and interprets the context of the data, not just the text.
- ✓ Data Validation: Automates data verification and validation processes.
- ✓ Complex Document Handling: Efficiently processes various document types and formats.
- ✓ Workflow Automation: Integrates with business processes to automate entire workflows beyond simple text extraction.

Blockchain →

Blockchain
to ensure
Records
Integrity



Blockchain for Records →

RECORDS MANAGERS

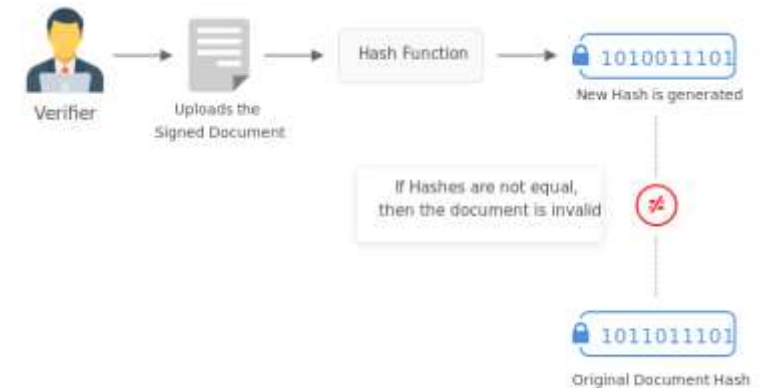


CHALLENGE

Ensuring the authenticity and integrity of records.



BLOCKCHAIN



SOLUTION

New way to ensure electronic systems offer integrity.

Blockchain for Records →

Digital Signatures

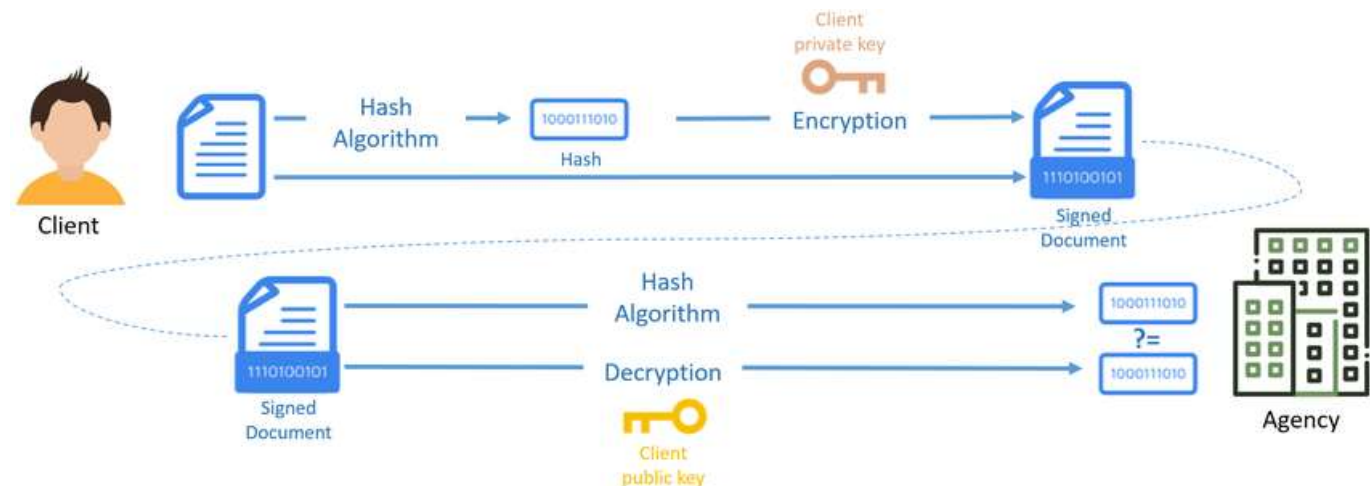
A common form of transactional data, can be stored on a blockchain.

Currently when we digitally sign an electronic textual document, such as a PDF, the signature is stored in the document itself.

Validate Record Authenticity

A blockchain could be used to provide authenticity for a record. When an organization provides a record to users, it can usually provide provenance and certification that it is a true and accurate copy.

If there is any question afterwards, it would have to be compared to the original. If the certificate of authenticity is retained in a blockchain, the record could be re-hashed to determine if any changes or alterations have been made.

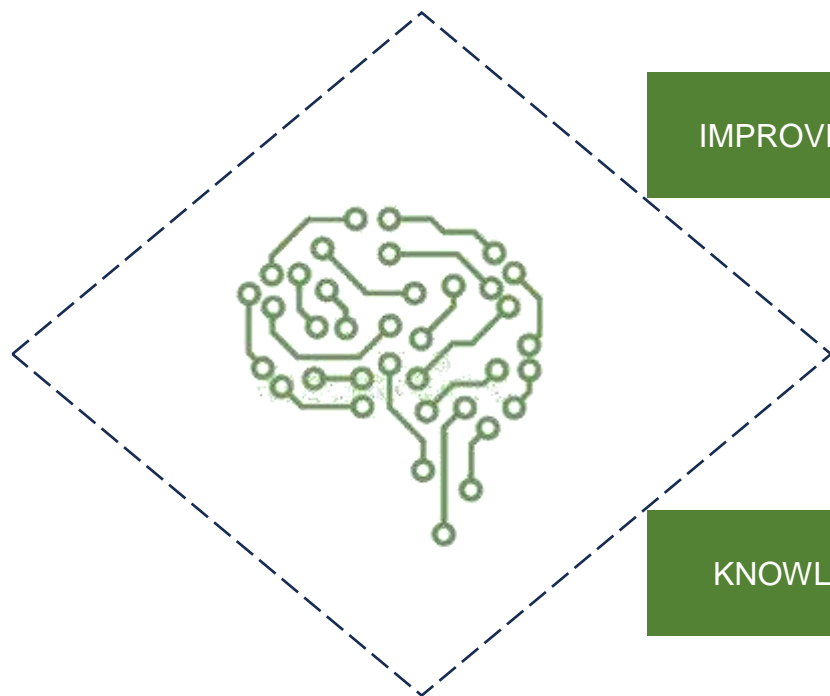


Artificial Intelligence →

Ai to enrich
Records
Intelligence



Ai for Records →



IMPROVE RECORD INTEGRITY

KNOWLEDGE MANAGEMENT

ENDLESS POSSIBILITIES

- FRAUD DETECTION
- PII DETECTION
- AUTO CLASSIFICATION
- TAGS GENERATION
- RECORD SUMMARIZATION
- LANGUAGE TRANSLATION
- RECORDS TIMELINE

The Challenge →

RECORDS MANAGERS



Ensuring the authenticity and integrity of records.

TYPES OF DOCUMENT FORGERY

Document forgery encompasses a wide range of deceptive practices involving the manipulation of documents to deceive others into believing they are genuine. Some common types of document forgery include:

- **Signature forgery:** Fraudsters alter or replicate signatures to misrepresent a document's authenticity and authorization.
- **Altered content:** Documents are tampered with to change critical information, such as dates, amounts, or terms.
- **Counterfeit documents:** Criminals create completely fake documents to impersonate legitimate ones.
- **Photocopy manipulation:** Unauthorized alterations are made to photocopies of documents to present false information.

Ai to detect Forgery



1. **EXIF and XMP data analysis:** Metadata within document files provides vital information about post-scanning alterations and the software used for modifications.
2. **Scan fingerprint analysis:** This method involves scrutinizing subtle patterns in document scans that may reveal manipulations that are barely visible to the human eye. By detecting these anomalies, the platform can expose potential document forgeries.
3. **Copy-paste detection:** AI algorithms can identify instances of identical text, exposing fraudulent alterations made by copying and pasting text. This method enhances the detection of forged documents and ensures the integrity of critical information.

Document with manipulations

Office DEPOT **CUSTOMER RECEIPT** Page: 1

Customer Information		Order Information	
Customer Name:	2217	Order Number:	977199461481
Customer Pin:	902 2042000	Order Date:	11/03/17 1:29 pm
Customer ID:	7516054	Invoice Date:	11/03/17 1:29 pm
		Name:	2217
		Payment:	in-store

QTY	Description	Qty Ordered	Qty Picked	Price/Unit	Extended Price
001000	107500 x 10000	100			
010000	50 10000 10% 10000	200			20.00
010000	10000 10% 10000 UP	200			20.00

Bring this receipt to any register for payment processing.

Signature (required): _____
Please Print Name: _____

This order is VOID if not scanned by 11/03/17 and cannot be used as if resending is necessary. Order is VOID if not scanned.

Thank you for shopping at
Office DEPOT

Fingerprint - manipulated text

Fingerprint - normal text

Ai for PII detection

RECORDS MANAGERS



Ensuring the sensitivity of information in records.

A screenshot of the digiworks records management interface. The interface is in a web browser and shows a navigation menu on the left with folders like 'Energy Company', 'Ministry of Innovation', and 'Test Site'. The main area displays a list of documents under the 'Ministry of Innovation' folder, specifically in the '02. Research Papers' sub-folder. The list includes columns for Name, Title, Version, Status, Modified By, and Modified Time. The documents listed are: 'resume_sample_student@e...', 'Resume-Sample-ICT.pdf', 'Example-CV-and-Covering...', 'Record-Management-2-1-v...', 'Digital Records and Legal A...', 'Digital Records and Legal A...', 'Indiana Rules of Evidence.d...', '05d - Internal Audit Report...', '9.03_SELF-AUTHENTICATI...', and 'modelerec_policy_state_2...'. The interface also shows a search bar, navigation buttons, and a user profile in the top right corner.

Name	Title	Version	Status	Modified By	Modified Time
resume_sample_student@e...	Sample resume - student	1.0		Hemant Prasad	in a few seconds
Resume-Sample-ICT.pdf	Sample Resume Informal	1.0		Hemant Prasad	a minute ago
Example-CV-and-Covering...		1.0		Hemant Prasad	3 minutes ago
Record-Management-2-1-v...		1.0		Hemant Prasad	24 minutes ago
Digital Records and Legal A...		1.0		Hemant Prasad	7 hours ago
Digital Records and Legal A...	Electronic Records and Li	1.0		Hemant Prasad	7 hours ago
Indiana Rules of Evidence.d...	Indiana Rules of Evidenci	1.0		Hemant Prasad	7 hours ago
05d - Internal Audit Report...		1.0		Hemant Prasad	7 hours ago
9.03_SELF-AUTHENTICATI...		1.0		Hemant Prasad	7 hours ago
modelerec_policy_state_2...	Sample Electronic Recorc...	1.0		Hemant Prasad	7 hours ago

Ai for Tags Generation

KNOWLEDGE WORKERS



Assign tags to records for easy retrieval, specially when uploading bulk records.

A screenshot of the digiworks document management system interface. The interface shows a navigation menu on the left with folders like 'Energy Company', 'Ministry of Innovation', and 'Test Site'. The main area displays a list of documents under the 'Ministry of Innovation' folder, specifically in the 'Q2. Research Papers' sub-folder. The list includes columns for Name, Title, Version, Status, Modified By, and Modified Time. The documents listed are: 'Record-Management-2-1-v...', 'Digital Records and Legal A...', 'Digital Records and Legal A...', 'Indiana Rules of Evidence.d...', '05d - Internal Audit Report...', '9.03_SELF-AUTHENTICATI...', and 'model_eroc_policy_state_2...'. The interface also features a search bar, a user profile 'Hi, Hemant', and various navigation icons.

Name	Title	Version	Status	Modified By	Modified Time
Record-Management-2-1-v...		1.0		Hemant Prasad	17 minutes ago
Digital Records and Legal A...		1.0		Hemant Prasad	7 hours ago
Digital Records and Legal A...	Electronic Records and Li	1.0		Hemant Prasad	7 hours ago
Indiana Rules of Evidence.d...	Indiana Rules of Evidenc...	1.0		Hemant Prasad	7 hours ago
05d - Internal Audit Report...		1.0		Hemant Prasad	7 hours ago
9.03_SELF-AUTHENTICATI...		1.0		Hemant Prasad	7 hours ago
model_eroc_policy_state_2...	Sample Electronic Recor...	1.0		Hemant Prasad	7 hours ago

Ai for Records Summarization

KNOWLEDGE WORKERS



Provide a summary of record to management for decision making.

A screenshot of the digiworks document management system interface. The interface is clean and modern, with a navigation bar at the top containing 'Dashboard', 'Tasks', 'Documents', 'Records', and 'Reports'. Below the navigation bar, there are tabs for 'Document Library', 'Templates', 'Recent Documents', 'My Favourites', 'Current Edits', and 'More'. The main content area shows a folder structure on the left with 'Ministry of Innovation' expanded to '02. Research Papers'. A table of documents is displayed in the center, with columns for 'Name', 'Title', and 'Status'. The document 'Record-Management-2-1-v2.docx' is highlighted. On the right side, there is an 'Actions' menu with various options like 'Start Collaboration Workflow', 'Share with External Users', 'Manage Linked Documents', 'File As Record', 'Manage Status', 'Preview', 'Edit Online', 'Edit Offline', 'Edit in Google Docs™', 'Edit in Microsoft 365™', 'Download', 'Manage Versions', 'AI Tools', 'Properties', 'Version', 'Comments', and 'Tools'. The bottom of the interface shows 'Showing 1-7 of 7' and 'Items per page'.

Ai for Language Translation

KNOWLEDGE WORKERS



Translate a record for dissemination to disparate audience.

A screenshot of the digiworks Document Library interface. The interface shows a navigation menu on the left with folders like 'Energy Company', 'Ministry of Innovation', and 'Test Site'. The main area displays a table of documents with columns for Name, Title, Version, Status, Modified By, and Modified Time. The table lists various documents, including 'TechVantage.docx', 'atestcontent.docx', and 'VendorProposalEvaluation...'. The status of some documents is '1-Draft'. The interface also includes a search bar and navigation controls at the bottom.

Name	Title	Version	Status	Modified By	Modified Time
docprocess				Administrator	14 hours ago
TechVantage.docx		1.0		Harisree Somu	10 hours ago
atestcontent.docx		1.0		Suganesh Rango	11 hours ago
TheGreatOfficePrankWar.d...		1.0		Harisree Somu	16 hours ago
atestcontent2.docx		1.0		Suganesh Rango	a day ago
VendorProposalEvaluation...		1.0	1-Draft	Suganesh Rango	a day ago
50 page sample PDF.indd.p...	50 page sample PDF.indi	1.0		Harisree Somu	4 days ago
PropertyEvaluationReport.d...		1.0		Harisree Somu	4 days ago
sample-VendorProposalEva...	long title testlorie testun	1.0		Harisree Somu	4 days ago
LegalAdmissibility.docx	Electronic Records and U...	1.0		Harisree Somu	5 days ago
021-010.pdf	Microsoft Word - af49-5f	1.0		Harisree Somu	5 days ago

Ai for Knowledge

KNOWLEDGE WORKERS



Ask questions, extract information from complex documents quickly.

A screenshot of the digiworks web application interface. The top navigation bar includes 'Dashboard', 'Tasks', 'Documents', 'Records', and 'Reports'. The user is logged in as 'Hi, Himant'. The main area shows a 'Document Library' view for a folder named 'AI test'. A table lists documents with columns for Name, Title, Version, Status, Modified By, and Modified Time.

Name	Title	Version	Status	Modified By	Modified Time
docprocess				Administrator	13 hours ago
TechVantage.docx		1.0		Harnisree Somu	10 hours ago
atestcontent.docx		1.0		Suganesh Rango	11 hours ago
TheGreatOfficePrankWar.d...		1.0		Harnisree Somu	16 hours ago
atestcontent2.docx		1.0		Suganesh Rango	a day ago
VendorProposalEvaluation...		1.0	1-Draft	Suganesh Rango	a day ago
50 page sample PDF.indd.p...	50 page sample PDF.indi	1.0		Harnisree Somu	4 days ago
PropertyEvaluationReport.d...		1.0		Harnisree Somu	4 days ago
sample-VendorProposalEva...	long title testlong testlon	1.0		Harnisree Somu	4 days ago
LegalAdmissibility.docx	Electronic Records and U...	1.0		Harnisree Somu	5 days ago
021-010.pdf	Microsoft Word - af48-5f...	1.0		Harnisree Somu	5 days ago

Concluding

Benefits of Emerging Technologies



ARTIFICIAL INTELLIGENCE
(AI)

- ✓ Improved user productivity.
- ✓ Information Intelligence



BLOCKCHAIN

- ✓ Improved record integrity, validation and trust.



AUTOMATION

- ✓ Improved user productivity.
- ✓ Minimize human errors.



DIGITAL SIGNATURE

- ✓ Improved verifiability.
- ✓ Improved user productivity.

ELECTRONIC RECORDS MANAGEMENT SYSTEM

THE BASE PLATFORM



Thank you

Connect with me at

 hemant.prasad@crestsolution.com

 +6011 2802 4051

 www.crestsolution.com