Use of scanning technologies to improve efficiency/effectiveness
Disruptive market pressures are hitting utilities

- Slowing Revenue Growth
- Customer Expectations
- New Competitors
- Regulatory Uncertainty
- Workforce Transformation
- Distributed and Alternative Energy
- Cybersecurity
- Utility of the Future
- Rise of Renewables

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Spectrum of automation technologies
The spectrum of technologies

Technologies range from basic automation to intelligent automation

**ACT**
like a human

**RULES**
Basic process automation
- Rules-based activities
- High volume
- Repeatable and standardized
- Structured data
- Transactional

**LEARN**
Enhanced automation
- Chat box activities
- Automated assistance activities
- Basic natural language processing activities
- Learning capability to improve service

**REASON**
Cognitive automation
- Enhanced natural language processing activities
- Deep learning HR processes
- Recommendations based on synthesis
- Structured and unstructured data

**THINK**
like a human
Artificial intelligence

AI is a broad term that encompasses many kinds of technologies that can observe, learn, and adapt to accomplish objectives just like a human.

- **Insights**: Capable of recognizing complex patterns from disparate sources of data and forming probabilistic insights.
- **Augmentation**: Software that can work alongside humans to learn patterns and augment human expertise.
- **Automation**: When combined with physical robots or software “bots,” full automation of complex tasks that typically involve human judgment is possible.
## Extracting data from paper forms

<table>
<thead>
<tr>
<th>Description and Characteristics</th>
<th>Optical Character Recognition (OCR)</th>
<th>Enhanced OCR</th>
<th>Machine Learning + OCR</th>
<th>Machine Learning + OCR + Crowd Sourcing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses OCR engines such as MODI, Tesseract, and ABBYY to read machine typed information from paper forms</td>
<td>Uses OCR with additional programmable features for forms (ABBYY FlexiCapture or Vantage) to increase quality of extraction</td>
<td>Uses machine learning to train an algorithm on a specific form, expected fields, and data types to increase quality of extraction</td>
<td>Uses machine learning to train an algorithm on a specific form, expected fields, and data types to increase quality of extraction</td>
<td></td>
</tr>
<tr>
<td>May have some elements of feature detection to distinguish characters from each other</td>
<td>May include connectors to export extracted data into many formats and systems (Kofax)</td>
<td>Each form has to be created as a reference template and trained using samples separately</td>
<td>Uses crowd sourcing for human review and checking of extracted data, generally parsed out at the form field level for security</td>
<td></td>
</tr>
<tr>
<td>Included as an out-of-the-box feature in many robotic process automation (RPA) tools</td>
<td>May have additional features, products, and service offerings for specific processes or use cases</td>
<td>Can be built using open source tools (6+ months) or purchased (AA IQ Bot; KPMG); purchased tools generally as-a-service solutions</td>
<td>Each form has to be created as a reference template and trained using samples separately</td>
<td></td>
</tr>
<tr>
<td>Limited ability to extract data from handwritten documents</td>
<td>Data easily consumable by RPA tools</td>
<td>Ability to extract data from handwritten documents depends on algorithm and number of examples (corpus)</td>
<td>High ability to extract data from handwritten documents</td>
<td></td>
</tr>
<tr>
<td>Limited ability to correct for documents that are not properly aligned; cannot correct for skew, rotation, incorrect page order, etc.</td>
<td>Some ability to extract data from handwritten documents</td>
<td>May include some capabilities to correct for rotation and skew</td>
<td>Includes capabilities to correct for rotation and skew</td>
<td></td>
</tr>
</tbody>
</table>

### Example Vendors
- **ABBYY KOFAK**
  - Tesseract
- **ABBYY KOFAK**
  - Google Cloud
- **ABBYY KPMG Ignite**
  - Google Cloud OpenText
- **Vidado Captricity**

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Cognitive contract management

Powered by KPMG Ignite
Today, organizations across all industries typically have one or both of the following challenges as it relates to contract lifecycle management:

### Ineffective CLM
- Large number of executed agreements globally, with little standardization
- Inability to manage the use of contract templates
- Limited visibility to commercial variability
- Manual effort needed to identify noncompliant contract terms

### Costly Support
- Large organization of legal resources needed to support procurement activity
- Legal resources used to manage contract redlines
- Overburdened resources tasked with administrative roles, instead of more strategic, value-added contributions

### Opportunity
What if we could provide solutions for both problems utilizing machine learning and modern technologies?
Example case study

*Client challenge:*

Changes to the lease standard by IASB and FASB would impact the client’s business and the way a multinational utility company recognizes leases, both in the US and UK.

- IFRS 16 and ASC 842 are diverged standards.
- The new standard changes the way entities recognize leases and will change the way they classify leases.
- Implementation of the standards can be complex, so it is important to assess the impacts across the entire organization.
- The changes are not just an accounting project but significant operational considerations.
- New technologies should be leveraged to enable these changes.
KPMG’s Cognitive Contract Management (CCM) provides prebuilt and customizable components as part of a workflow. The CCM platform comes with prebuilt functionality that can be expanded and configured to process electronic contract files and to learn to recognize the different patterns in contract to extract data.

**Conceptual CCM workflow**

- **Digitization and preprocessing**
  - Document Sourcing & Ingestion
  - Optical Character Recognition
  - Understand & Classify Text

- **Data extraction**
  - Document Categorization
  - Data Identification & Extraction
  - Store Document Data

- **Business intelligence**
  - 96% Compliant Compliance Analysis
  - Type: Time & Materials Document Categorization
  - Discount Not Realized

- **Business insights and results**
  - Contract Results and Metadata Upload
  - Data Available for Custom Analysis
  - Word output with tracked changes

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- The **Digitization and Preprocessing** is standard functionality.
- **Data Extraction** has prebuilt models that need to be trained and extended to process client-specific documents and required data points.
- The **Business Intelligence Engine** applies detailed business logic and SMP knowledge consistently and in an automated fashion.
- **Business Insights and Results** are customized output, reports, and dashboards so that SMPs can review the results.
CCM advanced NLP and cognitive models

CCM leverages multiple advanced techniques and can be trained on any contract language and understand multiple variations in language.

<table>
<thead>
<tr>
<th>Type of extraction</th>
<th>Sample text</th>
<th>Data point</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple find and extract</td>
<td>Service Term for all work will be twelve (12) months (the “Service Term”) commencing on the “Service Commencement Date”, which is the date the Service…</td>
<td>Contract length</td>
<td>12 months</td>
</tr>
<tr>
<td>NLP and ML interpretation</td>
<td>Contractor will notify ABC Company at least thirty (30) days prior to the expiration of the initial Service Term. If ABC Company does not elect to extend the Service Term in writing, the Service shall terminate at the expiration of the initial Service Term. If ABC Company elects to extend the Service Term, ABC Company and Contractor shall work together to extend on terms agreeable to both Parties…</td>
<td>Auto renewal</td>
<td>No</td>
</tr>
<tr>
<td>Calculation</td>
<td>[…] For a period not to exceed two (2) years and six (6) months from the Effective Date of the MSO dated … [use previously identified contract effective date from master agreement]</td>
<td>Expiration date</td>
<td>2020-09-30</td>
</tr>
</tbody>
</table>
Sample business rules for wind deductibles

1. Category
2. Location
3. Account Type
4. Minimum Deductible (% of TIV)

Wind Deductibles
Location
USA
Canada
USA – South of Virginia to Mexico
USA – Virginia and north: All wind tier counties
Other
Other exposed areas worldwide

Tier 1 counties
Tier 2 counties
Tier 1
Tier 2

Manufacturing Accounts
Non-Manufacturing Accounts
Manufacturing Accounts
Non-Manufacturing Accounts
Manufacturing Accounts
Non-Manufacturing Accounts
Manufacturing Accounts
Non-Manufacturing Accounts
Manufacturing Accounts
Non-Manufacturing Accounts
Manufacturing Accounts
Non-Manufacturing Accounts

>=Policy deductible?
>=Policy deductible?
Per location, not less than policy deductible?
Per location, not less than policy deductible?

>=10%
>=18%
>=8%
>=16%
>=12%
>=15%
>=10%
>=13%

Machine-Determined Outcome
COMPLIANT

Data captured

<table>
<thead>
<tr>
<th>Property</th>
<th>Country</th>
<th>State</th>
<th>County</th>
<th>Account Type</th>
<th>Minimum Deductible</th>
<th>TIV ($)</th>
<th>Deductible % of TIV</th>
<th>Wind Deductible Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>XYZ123</td>
<td>USA</td>
<td>NC</td>
<td>Wake</td>
<td>Manufacturing</td>
<td>100,000 USD</td>
<td>$1,000,000</td>
<td>10%</td>
<td>COMPLIANT</td>
</tr>
</tbody>
</table>
# CCM evaluation of contracting language

CCM can evaluate contracting language against templates and “acceptable” variations. Each change can be flagged as acceptable or unacceptable. SMPs only have to focus on unacceptable changes and receive outputs directly in Microsoft Word.

## Information security program

Third Party must implement *its own* active Information Security Program which is supported, approved, and maintained by Third Party.

1.1 Third Party must ensure all employees and Contract Workers working with are aware of and conform to these Third Party Information Security Requirements and legal and regulatory requirements pertaining to e.g., SOX, PCI, Export Control).

1.2 Third Party must implement or provide evidence of an Information Security Program which includes:

   a. Approved and maintained Information Security Policies and Controls
   b. Ownership and accountability for Information Security
   c. Identified personnel accountable for information security roles and responsibilities
   d. Security awareness and education
   e. Process to monitor compliance, and to independently validate the design and operating effectiveness of security controls

1.3 Third party must consistently demonstrate compliance with these Third Party Information Security Requirements. Any instances of non-compliance must be remediated by the Third Party, as soon as reasonably possible.

## Password controls

Third Party must implement necessary technical and organizational controls to ensure in any form, is protected from unauthorized access, modification, disclosure or deletion, and complies with all applicable laws and regulations.
Example uses for CCM

Address commercial leakage
- Identify and quantify variance between commercial agreements across your entire contract library
- Identify suppliers, products, locations, and terms associated with low and high performing contracts
- Supplement current procurement processes and manual reviews with KPMG technology

Clause compliance
- Automatically identify where compliance issues exist and issues with your commercial standards
- Automate the identification of compliance issues within your contracts and provide real-time recommendations for remediation

Contract pricing comparisons
- Compare pricing and contract terms for similar items across your entire contract library
- Identify where more favorable pricing standards exist
- Extract price lists to develop a comprehensive database of pricing

Internal audit
- Support the post payment audit during risk assessments
- Compare invoices rendered to contract clauses to confirm any overpayment
- Compare invoices rendered to price lists to confirm any value leakage

Legal department
- Support the legal team during the contract compliance review process
- Extract relevant terms from contract and create database of nonstandard legal clauses
- Compare contracts against standard templates to determine where variations exist

Supplier performance
- Supplier performance management
- Compare invoices rendered to contracts and supplier performance data to confirm invoices were correctly rendered
- Determine where unbalanced amounts exist and provide cognitive remediation recommendations
## Key business potential benefits

<table>
<thead>
<tr>
<th>Spend optimization</th>
<th>Example key potential benefits</th>
<th>Example potential return</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>— Consolidation of contracts in category</td>
<td>2% to 5% savings in addressable contracts value annually</td>
</tr>
<tr>
<td></td>
<td>— Consolidation of vendors in category</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Increased utilization of preferred suppliers and terms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Optimal payment terms, termination fees, early payment discounts</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk management</th>
<th>Example key potential benefits</th>
<th>Example potential return</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>— Risk management or avoidance for high-risk contracts, terms, and contract areas</td>
<td>Avoid 1 to 2 contract failure event(s) per year; improved warranty management</td>
</tr>
<tr>
<td></td>
<td>— Reputation risk mitigation (large, not quantified)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Better contract governance and controls (risk event avoidance)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operational savings</th>
<th>Example key potential benefits</th>
<th>Example potential return</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>— Productivity improvement through elimination of manual effort in contract analysis by contract management, sourcing, and business finance functions</td>
<td>5% to 10% productivity gain in contract management and sourcing functions</td>
</tr>
<tr>
<td></td>
<td>— Elimination of additional hiring with better contract manager efficiency and effectiveness</td>
<td>Reduced need for new hire contract management employees (“doing more with less”)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Talent optimization</th>
<th>Example key potential benefits</th>
<th>Example potential return</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>— Increased employee satisfaction through use of technology to eliminate mundane manual tasks for contract metadata maintenance and research</td>
<td>3% to 5% reduction in unwanted contract management employee turnover</td>
</tr>
</tbody>
</table>

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