ASSET DECOMMISSIONING

The decommissioning of aging offshore oil and gas platforms, subsea wells and related assets is increasing dramatically, with more than 600 projects expected to be disposed of during the next five years. This rapid trend toward decommissioning is causing spending to rise significantly, according to a new study by *IHS Markit*. Spending on decommissioning projects is expected to increase from approximately $2.4 billion in 2019, to $13 billion-per-year by 2040, or an increase of 540%, total expenditures from 2019 to 2040 will amount to $210 billion. Each year, the industry currently decommissions an average of 120 projects on a global basis. In terms of decommissioning, the global offshore industry and service vendors of all types is headed for a perfect storm.

Increasingly more stringent decommissioning regulations written by ***BSEE*** *(US – Bureau of Safety and Environmental Enforcement)* while the inventory of structures nearing end-of-life status is getting larger and more complex. Providers of decommissioning services are very fragmented—there are no dominant players, so this makes it even more difficult for offshore E&P companies and service providers to accurately predict decommissioning costs and risks.

E&P activity has shifted to deeper waters, harsher environments and increasingly complex projects. Some of which comprise hundreds of wells and miles of risers tied back to a few ultra-large platforms. Operators now face enormous challenges when planning the removal of these assets. Some of these decommissions can cost billions of dollars and take over a decade to successfully dispose of with no return on investment or revenue, but instead carries significant environmental and regulatory liabilities. The effective decommissioning of offshore platforms, subsea wells, and related assets is one of the most important business challenges facing the oil and gas industry today and in the future. Although E&P activity in open water dates back more than 60 years, the offshore decommissioning industry is still essentially in its infancy. Items typically involved in decommissioning include surface facilities, called topsides, as well as subsea installations, pipelines and wells. These topsides structures can vary greatly in size and function, from one small well/wellhead to massive deep-water installations, including large processing and storage facilities, and staff accommodation facilities. Navigating the myriad of operational planning and regulatory challenges for operators is becoming increasingly more complex, putting a premium on minimizing data gaps for accurate analysis.

The Gulf of Mexico *(GOM)* is the world's largest region in terms of the number of platforms to be decommissioned with more than 5,000 oil and gas structures in place, over half of which are candidates to be decommissioned in the next 10 years. Decommissioning costs vary across a wide range of platform types: smaller, unmanned platforms can cost as little as $2 million to decommission. While larger deep-water structures can cost upwards of $2 billion to decommission. Since the Macondo incident, BSEE has introduced increasingly tougher regulations causing operators to rethink the approach to decommissioning. The results of this increased regulatory pressure put the demand for accurate pre-decommission planning and minimizing records/data gaps at a premium.

With Radix Data's blended disciplines of WIB, Deep Engineering Attribution, and, Records Conversion we are uniquely positioned to solve the challenges operators are facing with Asset Decommissioning. A successful Decommissioning project depends entirely on a "front-end-loaded" process feeding data from huge collections of stored records. By the simple nature of a decommissioning project - the data is always old, unstructured, and typically stored in boxes at multiple offsite facilities. The challenge of locating required records, buried within, is enormous and costly. Radix Data's WIB product and service delivers an economically attractive solution to "close" data gaps usually manifested in decommissioning projects. Operators who execute decommissioning projects with data gaps have lower-confidence project plans creating regulatory permitting issues and increased error-margin predictions with unacceptable project performance.

WHAT'S IN THE BOX (WIB)

We work in a data-centric world. Businesses today are being "crushed" with an overwhelming amount of incoming critical data that needs to be managed, stored, and retrieved to allow companies to compete in a rapidly changing data-driven world. With these demands, data professionals who understand the world of managing business efficiencies relies, like everything else we draw upon in our work, that delivering timely and accurate data to the user for decision-making support is imperative for success.

We are making more data today and outpacing all expectations that was predicted a decade ago. Experts suggest that every two years (and shrinking) we create more data than existed on the planet earth for all of civilization. Most of this new data is unstructured, versus that type of data that is neatly entered into our software and database applications. This data-shift has caused businesses to focus finite critical resources on the vast current stream of inbound data that is "crushing" businesses. New technologies such as Artificial Intelligence (AI) and Blockchain is growing fast and will help to reshape how we think about managing this paradigm shift.

But what about legacy data? How is legacy data that continues to exist only as paper records stored in boxes, typically at offsite storage locations, being considered? Arguably, were it not for the enormous volumes, new data is easier to manage than legacy data because of rapid technology innovation available to businesses allowing data to be managed and mined economically. On the other hand, innovation for managing critical legacy, or paper records, is limited. Traditionally, the only way to retrieve information from legacy data collections was to either contract with a scanning vendor to scan and index legacy records or deploy teams to search in large collections of boxes of records for target information. Cost barriers, business disruption with unpredictable results limit these choices as viable options while more and more data piles-on at an unmanageable rate. This dilemma clearly needed a solution with efficacy and economics in mind.

So, Radix Data set out to solve this problem and introduce new technology to challenge this dilemma. The problem was twofold. 1). Deliver an economically effective solution to "look" into physical boxes of paper records without having to dispatch people or hire a vendor to digitize box content. 2). Create a user-friendly hosted application that easily allowed for viewing box content, complex searching, clustering and actioning in near real-time. The result - Radix Data's WIB product suite. WIB was designed and developed with these two principles as the keystones of the application. As of Q4 1019, WIB is commercially available, and by all accounts, WIB has over achieved expectations in every measurable metric

What's in the Box takes the technological advantages offered in a digital file room and applies those to the physical records that persist in the records review process today. What's in the Box transforms the review and identification of potentially relevant paper records and the request of said records from off-site storage by presenting a digital photo of the records in a box in off-site storage to those involved in the records discovery process. Reviewers can now access and review physical records in the same convenient method as those records in a digital file room. What's in the Box can deliver a digital representation of a box for 3.5% of the industry average cost of traditional scanning services[1].

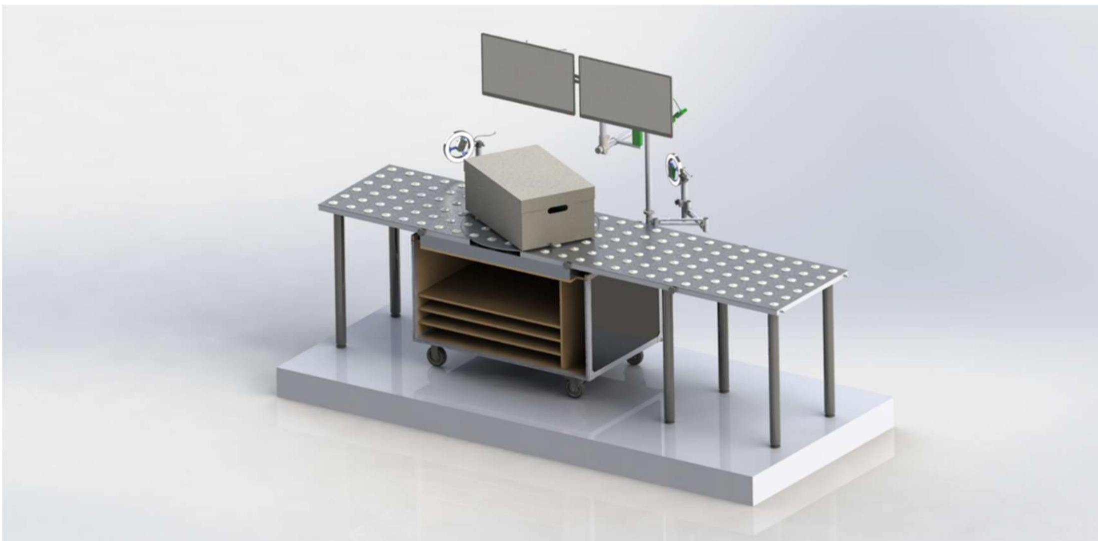


PHOTO CAPTURE OF PHYSICAL RECORDS

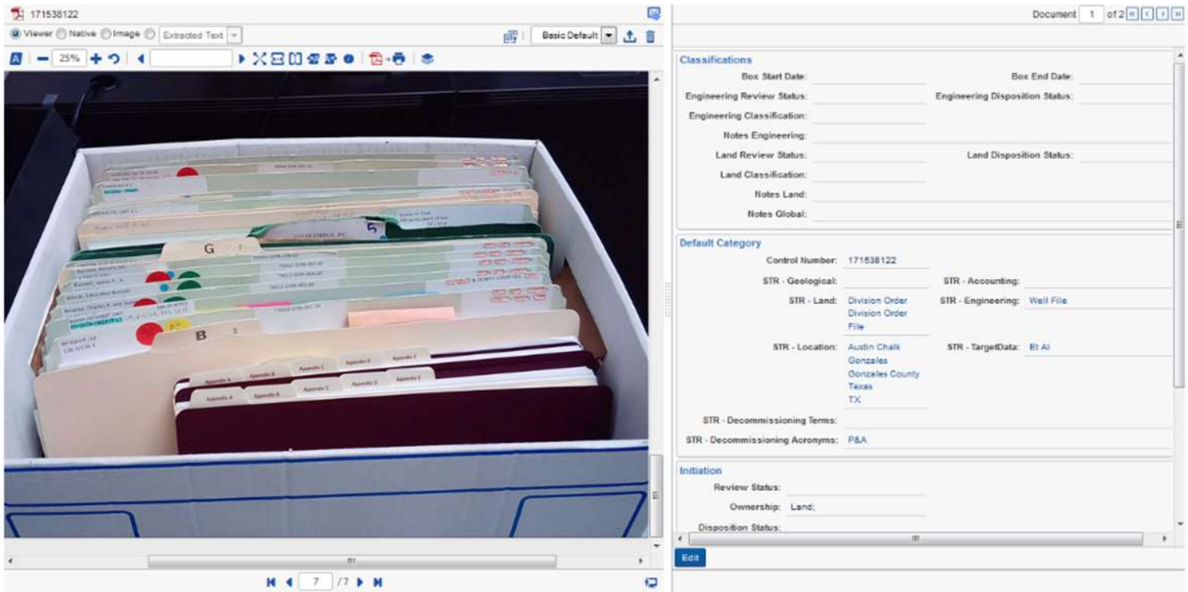
- Digital Photo of Box Content & Sides – Box Content (Aerial, Standard, Stadium and/or each File) along with Five (5) sides of the box (Front, Right, Back, Left and Top)

DATA EXTRACTION FROM PHOTOS

- OCR file labels - Insight into box content
- Term Modeling – Create a list of important terms with the ability to create a relationship to misspellings, stemmed versions of the word, synonyms and acronyms of the term/phrase.
- Term Tagging – Tag boxes containing terms of interest from term model.
- Data Extraction – Perform data extraction utilizing curated lists of record types, a glossary of terms, geolocation data (i.e. country, region, state, county, city, and parish), or any other information related to a case.
- Date Extraction - Confirm the range of records in the box from extracted Dates found on File Labels

[1] Traditional Scanning Services cost includes the following: retrieval from off-site storage, delivery of the box to a scanning facility, the scanning a standard records box containing 2,500 pages, returning the box to off-site storage and refiling the box.

REVIEW RECORDS AND DATA



- Security for granting access to records.
- Traceability for decisions.
- Central Repository for review.
- Efficient process for reviewing paper legacy records to determine boxes containing high value documents to include in the review.
- Add metadata to extracted terms from review of file labels.
- Create a workflow for pre-review of physical records.
- Reporting provides real time analysis of review status.
- Analytics
  - Visual Data Analytics clusters terms found in OCR data to present groups of relevant boxes.
  - Uncover similarities to create a target list of records
  - Explore patterns of interest.