TRANSFORMING PRINT-READY DOCUMENTS INTO PREFERRED CUSTOMER COMMUNICATIONS

Multichannel Digital Output and eDelivery

Abstract

This paper examines challenges organization face with producing multichannel customer communications and how the Crawford Technologies eDeliveryNow® Platform addresses these challenges to provide a great and consistent customer experience (CX).

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Customer attitudes towards business' have changed. Customers expect better consistency, quality, availability, and value[1] from organizations, whether that be making a purchase online, interacting with customer service, or receiving communications such as bills, statements and invoices. They also want to customize their experience so it will be personalized for them. If enterprises can't meet consumer expectations, then they will switch to new and different businesses that will provide products and services that will meet their expectations.[2]

A challenge for many organizations to provide better consistency, quality, availability and value to their customers is the large number of communication touchpoints they have with them and the ever-increasing number of channels through which they communicate. Compounding that challenge is the fact that the same customer touchpoint can be found on different communication channels but not every channel is reduced to a single touchpoint.

The second challenge organizations face is the amount, type and age of business systems and applications they use to serve their customer communication touchpoints and channels. Most large enterprises have software suites for sales and marketing like customer relationship management (CRM), marketing automation platform (MAP) and social media management (SMM) software. These suites of software are newer, cloud-native, and typically aren't designed for high-volume inputs and outputs. Organizations also have software solutions for customer service management teams in the form of call center management systems, enterprise content management (ECM) systems, customer self-service web portals and smart phone applications. These solutions can range from state-of-the-art mobile phone applications to older, on-premises software tools that may or may not integrate well with other business systems and the content they produce. Organizations also have accounting and billing departments that rely on enterprise resource planning (ERP), product information management (PIM) software, and integrated document archival and retrieval systems (IDARs) to keep track of, compile and report on products and services used to create customer statements, bills, invoices and associated documentation. Many of these business systems were architected in the early 1990's and are still used by

TOUCHPOINT VS. CHANNEL

A channel is a communication medium that a company offers its customers. Not every channel supports a two sided communication, e.g., billboard or print ads. A channel can be analog (printed letter) or digital (Web page, email, text).

Touchpoints, on the other hand, are clearly defined by customer interactions. If a customer wants to know something about a product, signs up for a newsletter, buys something or gives negative feedback she does so by interacting with the company and thereby defining the touchpoint.

The same touchpoint (for example a complaint or request for information) can happen on different channels. But not every channel is the right one for every touchpoint.

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[1] https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/a-global-view-of-how-consumer-behavior-is-changing-amid-covid-19
[2] https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/a-global-view-of-how-consumer-behavior-is-changing-amid-covid-19

lines of business (LOBs). These systems provide the back-office backbone for an organization. They are costly to maintain, hard to integrate, and difficult to replace.

To overcome these challenges to provide a great and consistent customer experience (CX) that meets customers' expectations, organizations need to:

- **Manage and output communications by customer preference:** offer customers an easy and consistent way to customize their preferred communication channel– electronic delivery (eDelivery), accessible, traditional print, braille, mail.
- **Integrate customer communications at the content level**: use REST API Web Services to integrate business systems and applications used to create and output customer communications at the content level.
- **Centralize the orchestration of customer communications**: establish a customer communication operation center to orchestrate the production, management and output of customer communications in all formats.
- **Design and configure customer communications once:** fully visualize how digital output, including PDF, Accessible PDF, and HTML5 will appear across multiple communication channels.
- **Transform and reuse existing print-ready customer communications:** normalize, optimize, enhance, and transform source files into mobile-ready and accessible PDF or HTML5 formats for distribution to all preferred digital channels without altering existing up-stream production processes.

Crawford Technologies eDeliveryNow® Platform is an open and modular framework that is extensible and adaptable to meet current and future customer communication needs. It provides organizations the components they need to personalize the delivery of customer communications via their preferred digital channel while achieving new efficiencies and cost savings. eDeliveryNow eliminates the need to recompose print-ready documents or change up-front workflows. It efficiently transforms customer communications and documents originally designed and formatted for physical delivery into mobile ready, accessible formats. These communications can then be electronically sent via a customer's preferred communication channel.

The remainder of this paper will further examine the challenges organization face with producing multichannel customer communications and how the Crawford Technologies eDeliveryNow Platform addresses these challenges to provide a great and consistent customer experience (CX).

Manage and output communications by customer preference

For business to thrive, they need to know their customers' experiences and personal preferences. That is, how their customers feel about the business and what positive and negative emotions they receive when interacting with the business, its departments and employees throughout the relationship. When expectations are met – consistency, quality, availability and value – customers remain emotionally loyal to the brand; when exceeded, they become outspoken supporters; and when expectations fall short, customers will find alternatives and give negative reviews. In fact, PwC surveyed 15,000 consumers for their future of CX report and found that 1 in 3 customers will leave a brand they love after just one bad experience, while 93% would completely abandon a company after two or three negative interactions. [3]

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[3] https://www.pwc.com/future-of-cx

As a result, top companies understand that knowing their customers' experience is critical to achieve revenue growth, customer retention and optimal operational efficiency. They are investing in people, processes and technologies to drive and evolve their customers' experiences.

One area of focus to drive better customer experiences is to leverage the digital transformation of customers by allowing each to decide their personal preferences for paper, web and mobile experiences. This choice, known as the customer preference, helps an enterprise build trust and the foundation for a long- term, mutually beneficial relationship across communication channels— mail, email, text, social media, and more.

eDeliveryNow Preference Manager

A core part of Crawford Technologies eDeliveryNow Platform is Preference Manger. It aligns customers' preferred communication channels by capturing, storing, and managing preferences for eDelivery (email, text messaging/SMS, web portal, mobile, social media), accessible documents (PDF, PDF/A, Accessible PDF, HTML5, WCAG 2.1 web content), and traditional (print, mail, phone).

Preference Manager provides a Web interface for customers to self-select their preferred communication channels or a customer service representative to manage customer preferences in real-time. After preferences are selected, the eDeliveryNow Platform can process existing print ready files from existing document composition systems and automatically create content for any selected preferred digital channel. As part of this process, eDeliveryNow can automatically suppress traditionally printed and mailed documents without making any changes to existing applications.
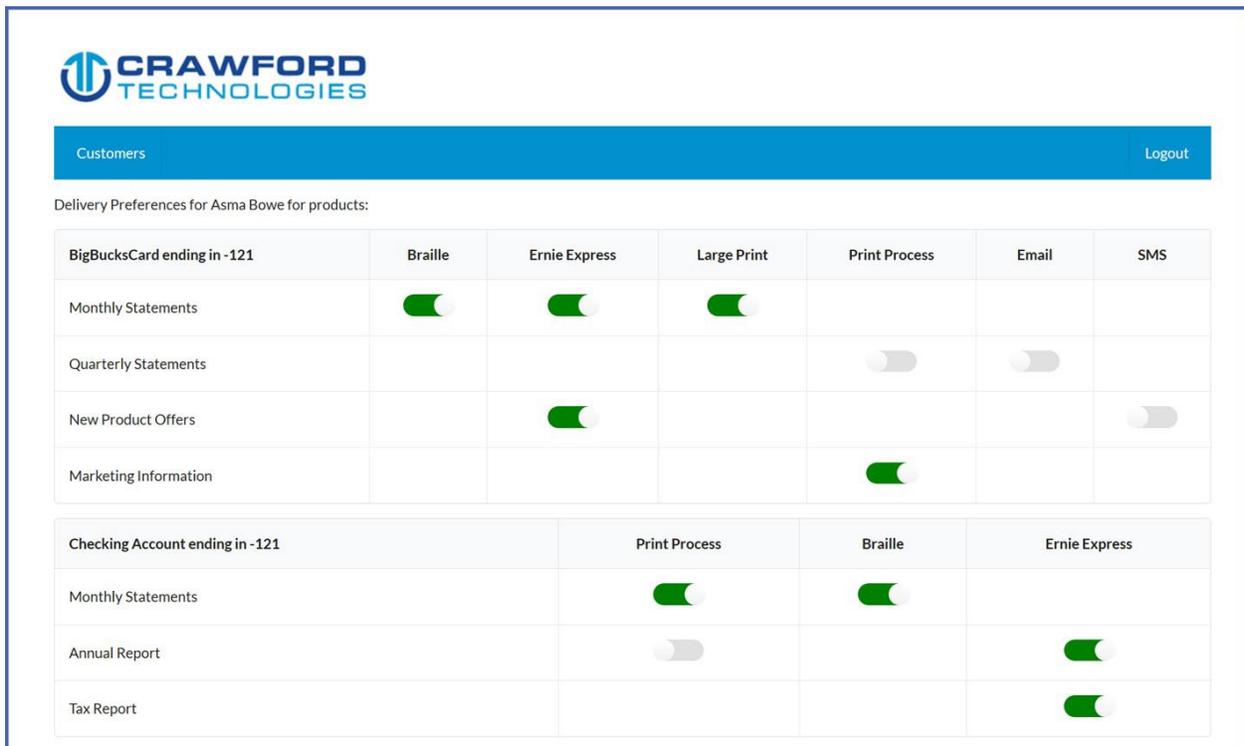

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Customers						Logout

Delivery Preferences for Asma Bowe for products:

BigBucksCard ending in -121	Braille	Ernie Express	Large Print	Print Process	Email	SMS
Monthly Statements	ON	ON	ON			
Quarterly Statements				OFF	OFF	
New Product Offers		ON				OFF
Marketing Information					ON	

Checking Account ending in -121			Print Process	Braille	Ernie Express
Monthly Statements			ON	ON	
Annual Report			OFF		ON
Tax Report					ON

Figure 1: Preference Manager delivery preference screen

Preference Manager enables customers who required assistive technologies[4] to request their required format so that they receive their communications in a way that is accessible to them. From braille to large format, e-text and audio formats, every customer's preference can be captured in Preference Manager. The eDeliveryNow Platform can then automatically create and deliver the content in the required format, saving an organization both time and money while providing the best customer experience possible.

Preference Manager features

- Captures, stores and manages digital and physical document delivery preferences for each individual customer and document type
- Provides a web user interface for customers to self-service or customer service representatives to manage preferences in real time
- Facilitates the ability to go paperless and suppress traditional print documents and associated costs
- Delivers customer communication preferences to the eDeliveryNow platform to process and deliver multi-channel output — electronic, print, mobile, web, and in accessible document formats
- Makes managing accessible documents in the normal process possible and not as exceptions

Integrate customer communications at the content level

Giving customers the ability to choose their preferred communication channels is a good first step toward offering a great customer experience. Organizations must also be able to deliver on that promise. How can an organization use a customer statement in a print-ready file format including AFP, Xerox, PDF, PostScript, PCL, and others from a system developed in the 1990's, convert it on-the-fly into a mobile ready or accessible format and make it available on demand via a text link sent to the customer to view the statement?

Integrating business systems and applications to share or exchange information is challenging, resource intensive and expensive. Modern, REST API Web Services help solve this issue by securely integrating business systems and applications used to generate customer communications at the content level. If done properly, customer communications will be encrypted at rest and in transit, and personally identifiable information (PII) will be redacted. This will greatly assist in making customer communications compliant with laws and regulations.

The eDeliveryNow Platform has three different components used to integrate business systems and applications at the content level – Sunrise, Riptide® and CCM Gateway.

- Sunrise is used to retrieve customer communications from enterprise content management (ECM) repositories and content services platforms (CSP) and transform them on-the-fly to a digital format for viewing at a user's request.
- Riptide® is used to retrieve customer communications from enterprise content management (ECM) repositories and content services platforms (CSP), convert them into a common format and package the content into digital output bundles.
- CCM Gateway is used to transform and transfer customer communications from business systems into modern, native cloud CSPs.

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[4] https://www.atia.org/home/at-resources/what-is-at/

Sunrise

Sunrise is a key component of the eDeliveryNow platform. It is a modern, Web services REST API for integrating customer communications at the content level. Sunrise is used to create multi-threaded, content transformations for a wide range of print formats including AFP, Xerox, PDF, PostScript, PCL, and others.

Sunrise gives organizations the ability to retrieve, convert and present information from legacy archive and retrieval systems, and enterprise content management (ECM) repositories quickly and accurately to support multi-channel delivery requirements.

Users can locate customer statements, bills, invoices and associated documentation in any integrated system regardless of the document type, image file and print format. They can then transform them on-the-fly, and format into widely acceptable PDF and HTML formats, including PDF/A, Accessible PDF and accessible HTML for WCAG-compliant content accessibility and HTML5.
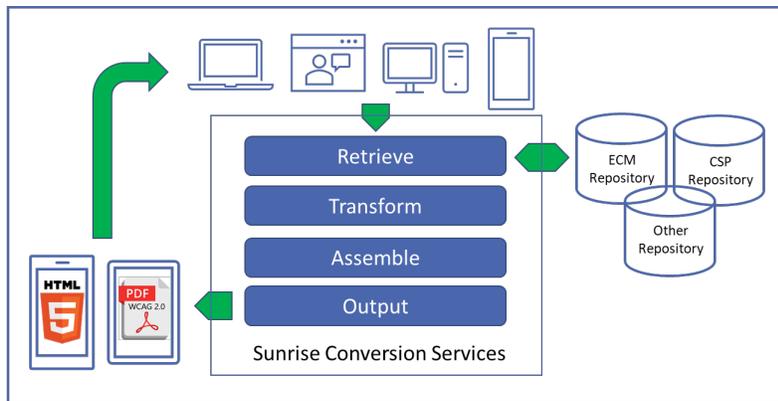

Figure 2: Sunrise Content Transformation Workflow

Sunrise features

- Integrates web and mobile applications with business systems and content repositories at the content level using the web RESTful API
- Retrieves transactional content from legacy ECM content repositories and content services platforms (CSP) – IBM Content Manger OnDemand, IBM FileNet® Content Manager, OpenText™ InfoArchive, OpenText™ Documentum™, ASG-Mobius ViewDirect, Alfresco One, Nuxeo, Microsoft SharePoint and any CMIS compliant repository
- Provides federation of repositories from multiple vendors
- Manages transformation of print file formats into PDF, Accessible PDF and HTML5 formats

- Provides appropriate formatting for multi-channel distribution of content for electronic presentment
- Becomes a single API for web and mobile apps to retrieve content from repositories
- Makes customer communications compliant and secure by encrypting content at rest and in transit
- Addresses data privacy laws, including HIPAA by redacting PII and protected health information (PHI)

Riptide®

Riptide® gives businesses a highly configurable, sophisticated customer communication and distribution engine. It retrieves content from enterprise content management (ECM) repositories and content services platforms (CSP), converts the content from any format into the optimal format for digital delivery, including PDF, PDF/A, Accessible PDF, HTML5, and then packages it into digital bundles for distribution. Riptide® content transformations are done through high-volume batch processing at scale. Output of content can be automatically personalized for customers and distributed to a customer's preferred communication channels. The Riptide® component is ideal for organizations needing to bundle content from legacy systems and modern applications.

Riptide® features

- Retrieves content from enterprise content management (ECM) repositories and content services platforms (CSP)
- Transforms legacy print and other file formats into required formats for viewing and consumption
- Packages content into digital bundles related to eDiscovery, case management and "request for information" regulations – FOIA, GDPR, CCPA

CCM Gateway

CCM Gateway is used to archive and electronically present high-volume customer communications in print-ready formats, including AFP, Xerox, PDF, PostScript, PCL, and others. It works with Nuxeo, Alfresco, Microsoft SharePoint, and other CSPs.

CCM Gateway uses Sunrise's modern REST API to manage universal print stream conversions.[5] It also provides functionality to ingest, index and classify documents so they are ready for ingestion. CCM Gateway makes it possible for customers to rationalize outdated archiving systems and manage all content including critical customer communications with their designated CSP. This

RIPTIDE® USE CASES

- Case Management
- Audits
- Claims Processing
- Hospital Discharge
- Site Inspection
- Requests for Information (FOIA, GDPR, CCPA)
- Loan Origination
- Transportation documents
- Digital Forms for Logistics
- Content Transformation
- Document Bundling and Distribution
- Personalized Communication

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[5] Sunrise is not required if the documents are stored as full-burst PDF

approach ensures that all electronic documents are effectively managed, securely stored, and fully compliant with best practices and regulatory standards.
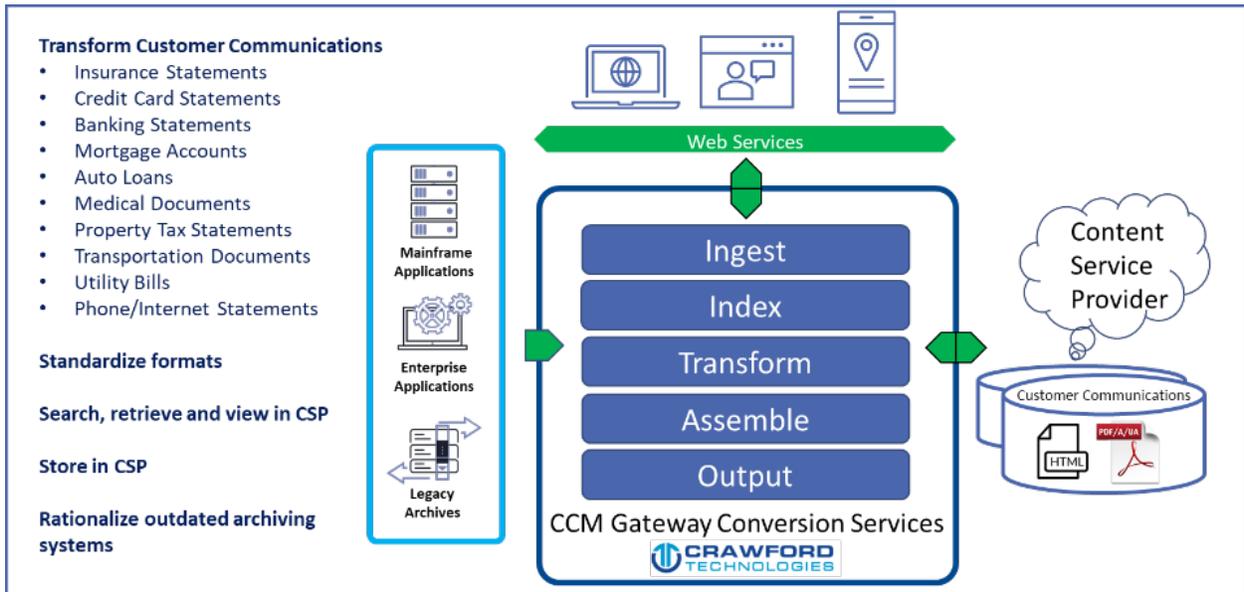

Figure 3: CCM Gateway Conversion Services Workflow

CCM Gateway features

- Ingests customer communications in print file formats at scale– AFP, Xerox, PDF, PostScript, PCL, and others
- Ingests, indexes, classifies, transforms and outputs customer communications to CSPs
- Utilizes compression rates as high as 90% to efficiently migrate content to the Cloud
- Streamlines customer communications archive management

Centralize the orchestration of customer communications

With customers having the ability to select their communication preferences and organizations having modern REST API Web Services to integrate business systems and applications at the content level, it makes sense to centralize the orchestration of producing customer communications. This concept isn't new. Prior to organizations digitally transforming their business' and moving towards electronic communications, many large enterprises had an automated document factory (ADF).

ADF's were used to design, produce and output high volumes of critical business documents and customer communications to production printers and document inserters. ADFs need to be updated to fully manage customer communications for multichannel digital output and eDelivery via web portal, SMS text, email, social media, and others. Unfortunately, many communications that an ADF must manage are not easily converted from print into user-friendly, accessible electronic formats. That, and a wider variety of document formats, communication channels and devices have added layers of complexity. To this extent ADFs, CRMs, ERPs, ECMs, and MAPs have their own independent functions and value to an organization, but for customer communications they must be able to work together and answer questions such as:

- Was the document transformed from another print format?

- In what format was the document created?
- Was the document combined with others and delivered together?
- Which documents were combined?
- What is the preferred communication channel?
- How was the document delivered?
- When did the document arrive?
- Can we confirm delivery of the document?
- When was the document viewed by the customer?

Organizations attempting to migrate from an output environment focused on printed and mailed documents to the multichannel world need tighter controls, better tracking, and comprehensive record-keeping to satisfy regulatory compliance, corporate service level agreements (SLAs) and customer demands.

PRO Conductor

At the core of the eDeliveryNow Platform is PRO Conductor. It is a highly configurable and easy-to-use component used to automate workflows for creating, monitoring, and managing the production of customer communication.
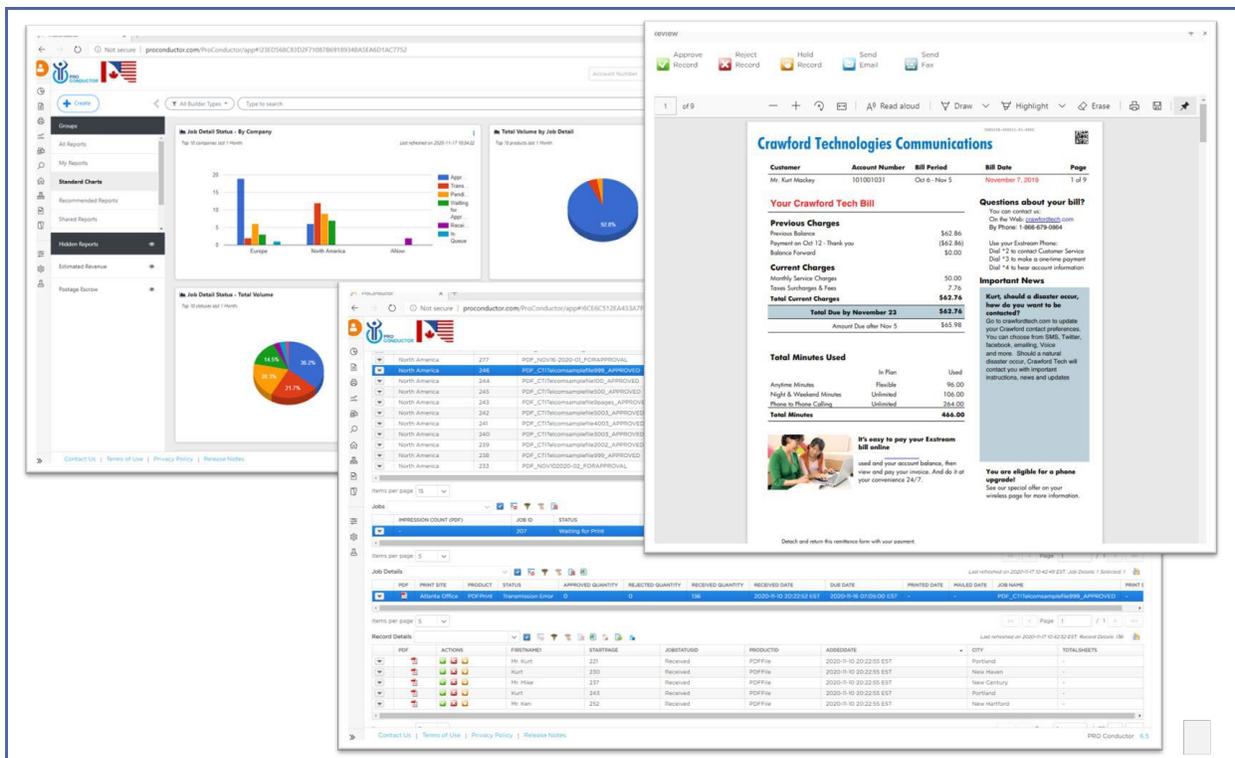

Figure 4: PRO Conductor processing customer communications

PRO Conductor is architected to easily integrate with other software systems and hardware. With a comprehensive selection of modules and dashboards, as well as more than 100+ connectors to well-known industry solutions for print production, finishing, multichannel output, payment, shipping, reporting, archiving, CRM, and mailing equipment, it is the central, comprehensive component needed

orchestrate production workflows for customer communications and documents. As organizations and customer communications evolve, PRO Conductor can be extended and enhanced to accommodate the addition of new business systems and applications or decommissioning legacy solutions.

PRO Conductor features

- Coordinates and controls the production and multichannel delivery of customer communications through preferred communication channels
- Provides a single view across multiple jobs, multiple workflows, clients and sites
- Eliminates errors by automating tasks
- Automates monitoring and tracking of communications for print, mail, multichannel digital output and eDelivery
- Extends secure visibility to all stakeholders from proofing and approval through order management
- Integrates with disparate systems for workflow management, SLA tracking, visibility, and reporting

Design and configure customer communications once

Many customer communications are designed and configured to be printed, and then converted to PDF for eDelivery. They may also be coded in HTML to be rendered on a Web page. The challenge for organizations is that those formats will not fully meet customer expectations. Customers expect a PDF and Web page to automatically scale to the device they are using and be accessible if they are visually impaired. A work around is to create a secure web portal and/or mobile application for customers to view statements, bills, invoices and related customer communications. Unfortunately, customers still want or need to have the ability to receive printed communications. Government regulations like the Employee Retirement Income Security Act of 1974 (ERISA) permit organizations who offer 401(k) and other tax-qualified retirement plans to electronically deliver covered documents. Plan administrators must also maintain reasonable procedures to allow a covered individual to request a paper copy of a document free of charge. They must also give individuals the ability to opt out of e-delivery and receive only paper copies of some or all of ERISA's covered documents. If a participant decides to opt out, then all future covered documents must be delivered in paper, unless the covered individual decides to opt back into e-delivery[6]. This type of regulation is not unique to the United States Federal Government.

Having to design and configure customer communications for eDelivery (email, text, web portal, mobile), accessible documents (Accessible PDF, HTML5, WCAG 2.1 web content), and traditional (print, mail) to meet customer preferences for channels of communications is more complex, difficult to get right, and a greater compliance threat than ever before.

PRO Designer

PRO Designer is a graphical user interface driven solution used to create instructions for reengineering and standardizing different customer communication document formats *after* design and composition, and *before* print and eDelivery. It automatically loads customer communication document print resources and rendering commands to the PRO Designer interface including fonts, forms, logos, images and colors. Individual objects such as text, images, barcodes and data can be added, edited/moved and

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[6] https://www.troutman.com/insights/electronic-delivery-of-required-erisa-notices-for-401k-plans-made-easier-under-new-dol-rules.html

removed from pages. Attributes such as color, font and size can also be changed. Pages can be added, suppressed or removed. If communications contain PII and/or need to be made accessible and/or redacted, then PRO Designer can apply redaction policies and accessibility tags to ensure the document complies with laws and regulations. After a customer communication design is standardized, PRO Conductor will schedule a job task for Preference Manager and Operation Express to process, transform and output the document based a customer's preferred communication channel.
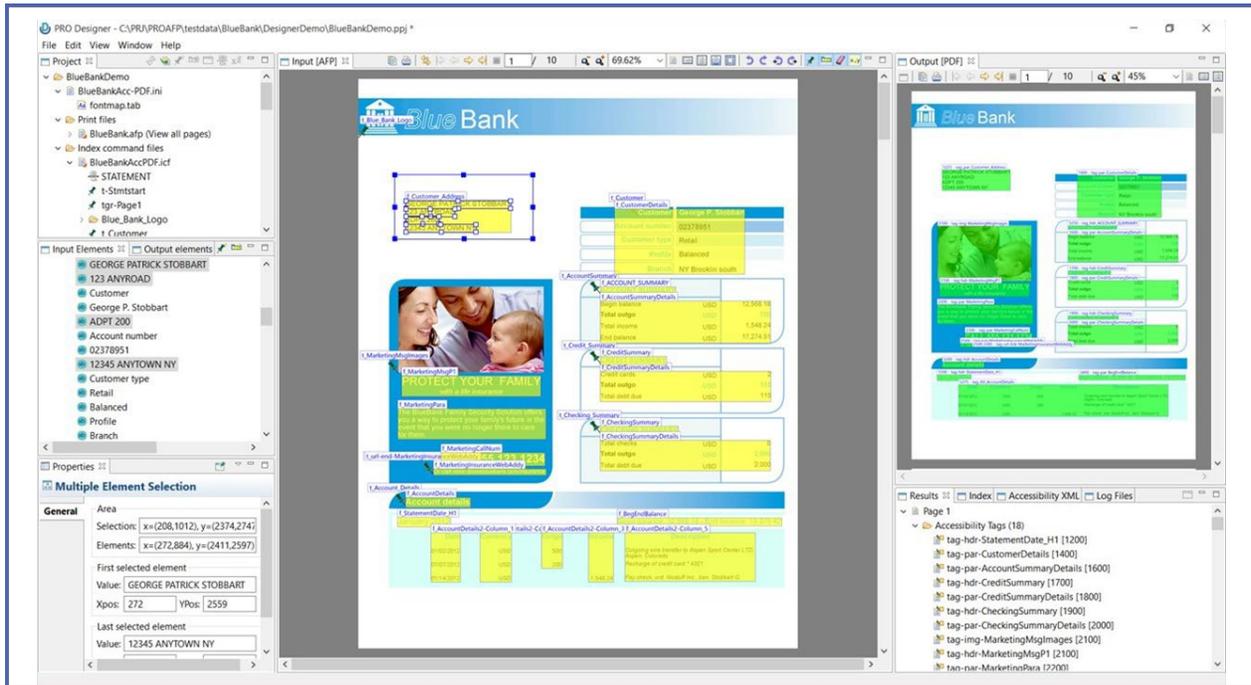

Figure 5: PRO Designer

PRO Designer Features

- Process fully composed documents such as PDF, AFP, PS, PCL, Metacode and others.
- Define how file processing, document reengineering, conditioning, standardization and digital transformation will occur
- Configure proper tagging for document accessibility, define reading order, identify artifacts and more to create Accessible PDF or HTML5 output that complies with global accessibility regulations[7]
- Create content containers that govern how HTML5 output will respond dynamically for viewing on different viewing devices

Go Mobile

Go Mobile is used in the eDeliveryNow Platform to provide an easy-to-use, comprehensive tagging solution to transform existing composed documents into responsive mobile-ready communication formats. It repurposes existing documents for mobile devices without extensive redesign efforts, specialized composition software or duplicative web application development. Customer communications that reside in CRM, IDARs, ECM and CPS repositories can be automatically transformed for mobile usage while they are being retrieved, allowing these documents to be multichannel ready within fractions of a second.

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[7] AccessibilityNow Transactional is needed to apply rules and create accessible documents.

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Go Mobile Features:

- Transform existing, composed customer communication documents (bills, invoices, statements, letters, policies, etc.) to mobile-ready communications without redesigning documents
- Enable legacy archived documents to be mobile ready on demand
- Reduce time, effort and costs to meet customer expectations
- Improve customer communications with mobile ready consistency, quality and availability

Transform and reuse existing print-ready customer communications

Large and medium size enterprises such as financial institutions, insurance companies, healthcare payers, hospitals, retail and manufacturers have large archives of customer records and communications that they must retain, typically between 2 and 7 years. For federal, state and local governments and universities, the retention time can be considerably longer, 10-30 years or more. If a customer makes a request for an institution to provide the last five years of their credit card and banking statements, then they would send a reprint request and charge the customer for the cost to reprint the documents. This approach is no longer acceptable to customers. Customers know that it is possible to retrieve all their statements in an electronic format on demand from a secure web portal via a mobile device or personal computer. Organizations must be able to digitally transform their archived customer communications on-demand to retain customers. It is too easy for customers to switch brands to get what they want, when the want it and in their preferred format.

Operations Express

Operations Express and its advanced document transformation engine is a foundational component of the eDeliveryNow Platform. It can transform fully composed, archived, print-ready documents including AFP, Xerox, PDF, PostScript, PCL, and others into mobile-ready and accessible formats (PDF, Accessible PDF, and HTML5 for multichannel delivery. Operations Express works with PRO Designer to receive input about how a file needs to be transformed. Chosen by top-tier organizations to transform, reengineer, and repurpose print streams, images, and documents, it along with PRO Conductor and all the eDeliveryNow components bring speed, scalability and reliability to multichannel digital output and eDelivery.

Operations Express Features
- Add color, logos, graphics, and hyperlinks
- Insert personalized marketing messages
- Move, edit or replace document elements/objects such as OMR marks or legacy Postal barcodes
- Remove banner pages, cover sheets, barcodes, and finishing markets
- Redact personal identifiable information to comply with regulations
- Index, combine, split, and batch output for delivery to digital channels and repositories
- Mine valuable data into XML, CSV, and user defined data formats for indexing, analytics, and more

![Crawford Technologies logo]

In Summary

The eDeliveryNow Platform and its modular components provide organizations all the tools needed to personalize the delivery of customer communications via their customers' preferred digital channel while achieving new efficiencies and cost savings. eDeliveryNow eliminates the need to recompose print-ready documents or change up-front workflows. It efficiently transforms print-ready customer communications and documents originally designed and formatted for physical delivery into mobile ready, accessible formats suitable for multichannel electronic delivery and consumption. The eDeliveryNow Platform can be deployed on-premises, in the Cloud or hybrid environments.
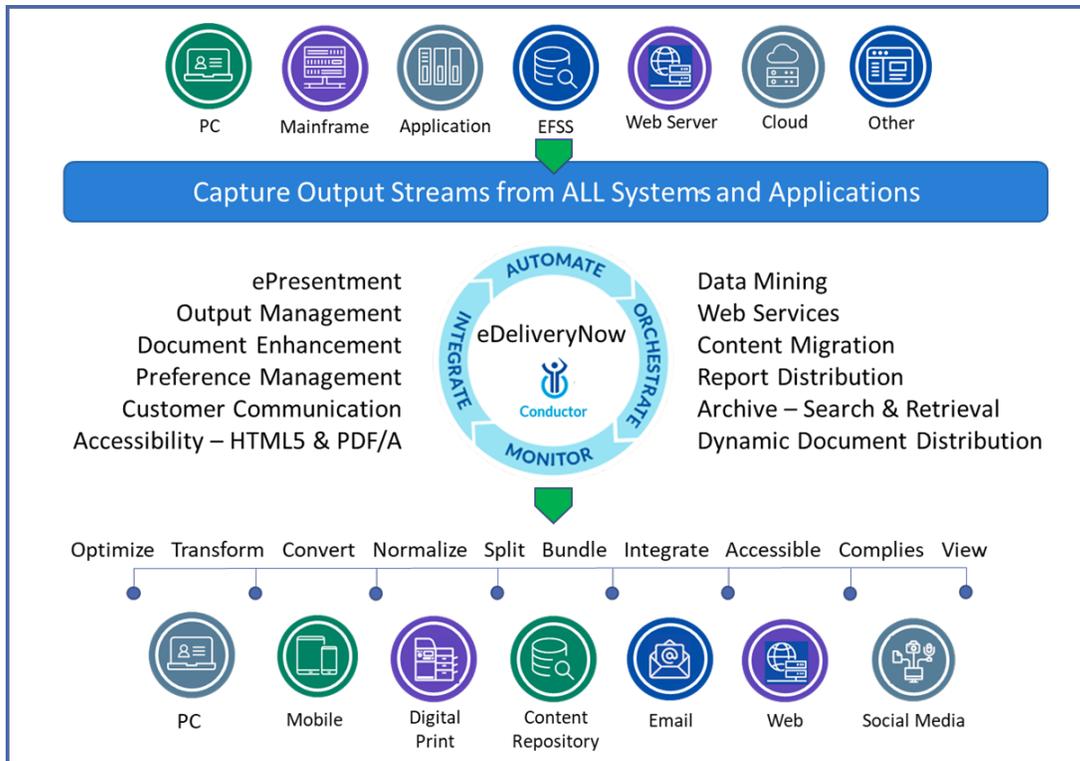

Figure 6: eDeliveryNow Platform capabilities

eDeliveryNow Benefits

- **Improve customer satisfaction**: send customers important communications via their preferred channel – a value-add to increasing customer retention.
- **Improve operational performance:** centralizes content transformations in a consistent and automated manner.
- **Increase versatility and usability:** manages the transformation of legacy print and file formats into universally and readily accessible formats for easy viewing and consumption.
- **Increase productivity and flexibility:** makes content available anytime, anyplace and anywhere for employees, partners and customers.
- **Meet compliance requirements:** packages content into digital and print bundles for "freedom of information" laws and "right to access information" requests.
- **Secure customer information:** redacts personal identifiable information (PII) without altering the original document to ensure data privacy while preserving the legality of the original document.

Manage and output communications by customer preference	
Preference Manager	Capture, store and manage customer communication channel preferences for eDelivery
Integrate customer communications at the content level	
Sunrise	Integrates business systems and applications for eDelivery
CCM Gateway	Ingest, index, transform, and archive/migrate Customer communications for electronic presentment
Riptide	Convert and bundle disparate customer communication for electronic distribution
Centralize the orchestration of customer communications	
PRO Conductor	Manage, orchestrate, and monitor the processes and delivery of customer communications
Design and configure customer communications once	
PRO Designer	Configure transforming and reengineering rules
Go Mobile	Creates mobile ready HTML5 for multichannel distribution
Transform and reuse existing print-ready customer communications	
Operations Express	Convert and compose print files for multichannel eDelivery
Services	
Professional Services	Provides services to plan, implement, integrate, automate, and monitor eDelivery processes
Assessments	Offers assessment of enterprise documents needed to be transformed into customer communications

Crawford Technologies

Crawford Technologies is an award-winning, global provider of software solutions and services that help enterprises optimize and improve the secure and accessible delivery, storage and presentment of their customer communications.

With over 1,800 customers on six continents, Crawford Technologies solutions and know-how enable the largest banks, insurers, healthcare providers, utilities and print services companies to use their existing technologies, documents and data in new ways. We help them navigate the challenges in leveraging legacy applications in the platforms and applications of the future

Crawford Technologies Professional Services are recognized for their in-depth industry knowledge and unequaled expertise in electronic document processing and output systems and applications. They have expertise and know-how to translate technology solutions into successful business outcomes while saving significant time and money. Through partnership with their clients, Crawford Technologies will clarify your needs, evaluate all options, make recommendations and help you conceptualize the solution. Crawford Technologies can install and implement eDeliveryNow or any other Crawford

Technologies' solution, educate and train staff, monitor the performance of the solution and measure its success to meet or exceed desired results.