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On the road to Boca Raton

NCCI's microcontent journey to future-enabled content

By Rob Hanna,
CEO and Co-founder
Precision Content

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Precision Content Authoring Solutions, Inc.
180 John St.
Toronto, ON Canada M5T 1X5

www.PrecisionContent.com

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When I first met the folks at the NCCI (National Council on Compensation Insurance) in 2018 at the DITA North America conference, they were already several years deep into their research on how to modernize their content production, including a possible migration from DocBook XML to DITA (Darwin Information Typing Architecture) XML. I suggested that migrating to DITA was only part of the solution and that they might benefit from a closer examination of their content lifecycle and goals for the content over time to improve access, search, and modularity of their content delivery.

Who is NCCI?

Founded in 1923, the mission of NCCI is to foster a healthy workers' compensation system. In support of this mission, NCCI gathers data, analyzes industry trends, and provides objective insurance rate and loss cost recommendations. It provides extensive documentation and guidance on compensation insurance to private industry insurance carriers under the guidance of 37 independent state regulatory bodies. In 2021, NCCI collected and analyzed approximately 3.3 million policies worth more than $26 billion in premiums.

NCCI's content

The biggest and oldest of the many manuals and guides NCCI maintains is simply called the Basic Manual. The Basic Manual consists of nearly 800 pages of information and tables used to administer workers' compensation policies. Each of the 37 member state regulators review and approve each individual change down to the section level. Content is only published to carriers once it has completed state regulatory approval. While not all NCCI manuals are filed with a state, the Basic Manual is one of a half-dozen manuals that are filed several times throughout the year.

NCCI also maintains an extensive database of more than 4,000 job classifications used by companies to classify their own operations to assess the monetary risk of each classification by state jurisdiction. These job classifications are cross-referenced extensively across all their manuals.

The human effort needed to prepare filings and manage the publishing is extraordinary!

Assessing their current state

The most pressing concern for NCCI's content operations was out-of-date technology and increasingly complex processes that limited their ability to manage and deliver content.

With every discovery session we assessed the client's content operations across three axes—Utility, Maintainability, and Usability. We scored each axis using a standard rubric adapted to the client's current situation.

CONTENT UTILITY

Utility looks at the usefulness of the content in its current form and its ability to meet the diverse needs of the client such as omnichannel delivery, translation, reuse, and workflow automation. The client scores high if their functional needs for the content align with its form. For example, if the

content is used only for slide presentations, then slideware may be the logical form for the content. However, if the same slide-based content needs to be reused across products and channels, then the utility score will be low. Utility is independent of the technology used to house the content.

The utility scoring for the NCCI focused on their issues maintaining the organization's DocBook XML-based content. The content took on a monolithic book-based structure, despite some updates to the architecture for inserting metadata necessary for publishing. There was no form of reuse across any of the content. When authors wanted to update content for a new filing, they copied the sections subject to change, edited them by hand, and then manually merged the content back into the DocBook source. All of this was extremely error-prone and came with a high human effort to maintain. It was clear that DocBook could not meet the longer-term needs for the NCCI.

We moved NCCI out of the monolithic DocBook structure into a topic-based architecture. By separating the content into topics and maps, the content was far easier to maintain and move through regulatory review across dozens of states. The content common to most states was identified as core national content, while state-level exceptions and variants were managed separately.

CONTENT MAINTAINABILITY

Maintainability looks at the processes and technologies needed to scale and maintain the system over time. If the client has a single writer supporting a simple documentation set, then a simple word processor and a version control system may be adequate. However, if the content is supported by a team of writers over a lengthy period, then word processors and a version control system will score low for maintainability.

The maintainability scoring for the NCCI focused on the dated technology used to house and author

the source XML for the content operations. NCCI used an enterprise document management system (DMS) rather than a more typical component content management system (CCMS). Their XML authoring tool was top of class 15 years ago but had long been eclipsed by more user-friendly authoring tools over the past decade.

NCCI's content operations were impressively complex. Even after content was authored, reviewed by four departments, and approved, it still took a team of dedicated publishers to get the content into users' hands. The opportunities for errors were exceptionally high. The NCCI needed reliable automation of their processes to improve speed, reduce opportunities for human error, and help the NCCI realize its goals for continuous publishing.

CONTENT USABILITY

Usability focuses on the content itself. It assesses the fit and consistency of the content to suit its intended purpose. Is the content appropriate for the target audiences? Does the content contain an adequate level of detail? Is the content accurate and timely? Is the content concise or is it ambiguous?

Can users find the information in its published form? Complaints of poor search optimization most often point to low levels of usability of the content rather than back-office technology.

The NCCI's content has been developed over many decades with much of it unchanged over the years. Over this long period of time, style and consistency had inevitably drifted to the point that there were obvious consistency issues across the corpus. Because every change, no matter how small, required regulatory approval, the cost and complexity of fixing minor grammatical and consistency issues were prohibitive.

We had a massive opportunity to tackle content issues as the entirety of the Basic Manual and other filed manuals had to go through a full regulatory review. The NCCI agreed to rewrite their content using the Precision Content writing methodology, which we specifically designed to support microcontent architectures.

Content lifecycle

The most challenging aspect of the project was understanding the full content lifecycle. There is no set schedule for when each state is required to complete their reviews. Some states are often several filings behind other states. NCCI occasionally sees states leave or join their services.

This irregularity of review and approval cycles does not fit well with any out-of-the-box release management features in a CCMS. A new workflow engine was needed to automate the complex process for managing the releases for each state. The NCCI chose RWS's Tridion Docs in part for its highly extensible set of APIs to allow us to build this new engine.

Prior to this project, the NCCI was obliged to wait until several states had approved the content before they could publish anything. Now the NCCI can publish for any given state as soon as that state approves the content.

ROADMAP

Our long-term goals for the project included

- transforming all manuals and guides targeted for new delivery channels
- deploying a new web content delivery platform
- single-sourcing publishing and delivery of content
- retiring legacy publishing and authoring platforms
- deploying a new content-as-a-service platform to connect published content to internal systems and customer information systems
- providing new collaborative, web-based options for regulators to assist with the review and approval of filings to speed up time to publish
- developing new conversational user interfaces such as chatbots and automated assistants, and
- continuously improving quality, efficiency, and cost metrics.

Architectural highlights

We knew we needed to carefully craft a sustainable content strategy to accommodate the complexities of the content lifecycle. Along with our content strategy, we designed a microcontent information architecture to streamline efficiency and open new channels for delivery. The following highlights are some of the key features that enabled our microcontent architecture to work.

STRONGLY TYPED CONTENT STRUCTURES

Our team analyzed many of the documents across the corpus to determine the appropriate types of information needed to capture the right content for the intended audiences. With this strong typing of the content, we could set writing rules around structures and titling conventions to provide added consistency and clarity to the content. We determined that the NCCI would benefit from adopting our Precision Content DITA (PCDITA) information types plus a few more to capture the right semantics for nature of the content.

The new set of topic types we introduced included

- consec – based on PCDITA Concept
- tasksec – based on PCDITA Task
- refsec – based on PCDITA Reference
- prosec – based on PCDITA Process
- rulesec – based on PCDITA Principle
- classcode – type of Reference
- classphrase – type of Concept
- analogy – type of Concept
- regsec – not typed
- formsec – type of Reference

CORE AND EXCEPTION MODELLING

Originally, NCCI separated their content into one main national manual and individual exception documents for each state. For each rule in the national manual there was an effective date and a list of states that had exceptions to the rule. To see the text of an exception, you had to flip to the state exception document. The result was that the information for any given state was split across multiple manuals. This made for a cumbersome user experience.

Our goal was to stitch all the national rules together with their exceptions to produce state-specific Basic Manuals. This led us to adapt the content to a "core" and "exception" model. For each topic, we created a container to house one core block of content and any number of exception blocks to handle state exceptions. The publishing mechanism renders the core unless the topic has an applicable exception block, in which case it ignores the core for that target state. This model allows the author to easily see how a rule applies across any states in a simple list view across the core and exceptions.

STRIP CORE

Any time a topic has an exclusion for a given state in accordance with the core and exception rules, all associated child topics below that node in the map are also excluded. This publishing plug-in feature, which we call "strip core," allows for much greater topic reuse across different states.

MASTER MAP

Regulatory filings result from content change requests from stakeholders. When a new filing kicks off, analysts review a single master map containing all the subject maps and state-specific maps and flag topics for update. The analysts create topic stubs where new content is expected to be added as part of the filing. Authoring can begin once all the map updates are complete.

FILING MAP

Once a filing map is created, all the flagged topics and new topic stubs in the master map are referenced into the filing map. Topics that were not impacted for that state are dropped from that state's filing map.

The filing map is published with all the filing assets needed by the state regulators, including side-by-side changes, clean pages showing the layout of the updates, and a book change history that captures all the changes indicated in the filing. While under review, the regulator can ask clarifying questions and request changes for that state as needed. The regulator can reject changes or exclude changes as it deems necessary.

If changes are requested, the analyst puts the filing map back to draft state, makes the necessary updates, and republishes the filing assets to send back for regulatory review. Once all the required updates for a state are complete, the filing map is released, and workflow automation triggers the rendering of the state publication map.

WORK PACKAGE MAP

All changes to topic content take place within the scope of a "work package" map. The size and scope of the work package is determined by the author tasked with completing the updates. Authors are intended to break work down into

related two-week sprints to manage workload and track progress on the writing project.

Once the filing package is first created, the author will reference the topics from the filing map into their work package map. All topics in it are released when the work package is complete, which triggers the next state for the filing map.

STATE PUBLISHING MAP

Every filed publication has a state publishing map used to render the state edition of the publication. The state publishing map shares the subject maps and applicable state-specific maps from the publication master map.

Workflow automation ensures that only the approved version of the topic appears in the rendered output. Publishing then applies the appropriate state filter and strips extraneous information at rendering time. This complex filtering of the topics allows the same topics to be in flight for other state publications and other concurrent filings.

HISTORY OF CHANGE

Once a filing for a state is complete, publishing generates a book change history file that lists all the topics that changed, when they changed, why they changed, and the specific version number of the topic. This provides the map with a complete history since its inception. Content that has been approved by regulators but is not yet effective is pushed out to an addendum so that carriers can see upcoming changes.

BASELINING

Tridion Docs by RWS uses baselining to record specific released versions of a publication. Authors can manipulate and freeze specific versions of any object in a publication, allowing the topics, maps, and media to be updated continuously in other publications where they are also used. Workflow automation accesses the baselining APIs to capture versions from authors' work packages and set the appropriate versions of topics in the state publishing maps.

TAXONOMY INTEGRATION

All publication taxonomy information is updated and stored in automated Microsoft Excel workbooks. Worksheets define the map structures and topic-level metadata such as index terms, search metadata, key names, and navigation titles for each publication's master map. This approach allows us to cross-reference common data sets and taxonomic structures across publications containing thousands of topics and hundreds of maps each. This approach also allowed us to connect our project management tools to track progress on authoring and gave us tools to audit the publications.

Delivery highlights

By the end of 2021, we had completed development to support NCCI's traditional channels for delivery, including static HTML, PDF, and CSV formats. This allowed the client to go live with their first three transformed and rewritten manuals for all member states in November 2021.

These traditional channels were just the beginning. There is still a long way to go on NCCI's planned roadmap to modernization. What follows is a list of future capabilities, pending or in some form of development at the start of 2022.

DYNAMIC WEB DELIVERY

Breaking content down into microcontent blocks and feeding it metadata as it transitions the content lifecycle will enable a dynamic web delivery system to reassemble this microcontent in a wide variety of ways.

Users will be able to personalize their views of the content across any period going forward from November 2021 to the present day. Users can even look into the future to see content with effective dates in the days and months ahead. This feature will allow carriers to go backwards in time to see what provisions were in effect when a claim was made or look into the future to see what provisions may impact how new policies are written.

Carriers will be able to view differences and similarities between states so they can write policies across state jurisdictions for employers that operate in multiple states. The search experience will be vastly improved from content enriched with a unified taxonomy.

ON-DEMAND PDF PUBLISHING

NCCI will be able to provide its customers with personalized PDF output assembled from the same microcontent XML and metadata database that powers web delivery. Users will be able to assemble their own print documents using components across states and across manuals for any given date after November 1, 2021.

CLASS LOOKUP TOOL

The class lookup tool is a popular feature used to look up key data about any job classification in any of NCCI's 37 member states. Users can get all the same rich content included in the manuals displayed in their web lookup form. This tool now consolidates the content with several other relational databases that had been separated up until the content transformation project.

RTF POLICY FORMS

The NCCI maintains more than 600 policy form templates that carriers can use to write up new policies on their own information systems. Custom publishing produces carefully formatted forms in RTF (Rich Text Format) that carriers then load onto their systems. Now the forms can be produced with significantly less manual intervention than before.

REGULATOR MICROSITES

The NCCI wants to make it easier for state regulators to evaluate changes to the manuals and speed up the approval process. Each state will get an individual microsite that the regulators can log into to access information about current, past, and future filings. The microsites will be powered by microcontent published from the CCMS and sent to WittyParrot. The entire history of each block is stored inside a Wit and indexed by WittyParrot where it can be assembled into searchable microsites representing entire manuals and individual state filings.

DETAILED CHANGE TRACKING GUIDES

Each filed manual will be published with a companion change tracking guide providing details of all changes impacting the manual. The change tracking guide will be used by insurance carriers to easily review all updates between filings of the manuals.

MICROCONTENT DELIVERY

Microcontent delivery can be used within the NCCI for several functions such as site inspection reports, customer service, research reports, and RFPs. All this is sourced from approved content sent through the CCMS and published to WittyParrot. Internal consumers of the content will not need to learn XML or CCMS tools to access the source content.

CONTENT-AS-A-SERVICE DELIVERY

The NCCI wants to be able to easily share its content with its partners through a web-based API system. This will be powered by microcontent published from the CCMS and stored in JSON blocks on a CaaS system for deployment.

INTELLIGENT PUSH TECHNOLOGY FOR NOTIFICATION OF CHANGES

Keeping carriers up to date with the changes coming through the system is a major challenge for the NCCI. Not wanting to overwhelm with too many email notices nor provide too little detail, the NCCI needs a more customizable system for communicating with carriers.

Notifications will be a function of the delivery platform solution and may be triggered by events in the CCMS workflow automation with the CCMS feeding content and metadata into the notification message.

Summary

I will always be grateful for the trust the NCCI placed in us to help facilitate this modernization project. At the time of this writing, we are entering our fourth year on the project. Our many wins as a team include standing up a new CCMS and upgrade, Acrolinx deployment, development of publishing stylesheets, completing the rewrite of eight manuals, and publishing the Basic Manual, Residual Market Manual, Scopes® Manual, and Class Lookup Tool all by the end of 2021.

Perhaps the biggest win for Precision Content for this project is the research and development that has gone into proving our microcontent use cases. With other clients, we have produced microcontent from their topic-based source content. The NCCI project, on the other hand, is our first pure, end-to-end microcontent authoring and publishing solution.

About Us

Precision Content was founded in 2013 and is a privately owned company based in Toronto, Canada.

Precision Content is a full-service solution provider to organizations seeking help to better understand and solve their content challenges. We help our clients improve productivity and performance through content transformation resulting in improved future-proofing, accessibility, and multi-channel publishing capabilities. You'll benefit from working with our structured content experts to design and implement world-class, scalable, and sustainable solutions for managing your content as a valuable corporate asset.

Precision Content's talented and experienced team of technical communicators, information architects, developers, trainers, and technology partners work with you to construct standards-based solutions transforming your content into highly-usable intelligent content.

THE PRECISION CONTENT® AUTHORING METHODOLOGY

What sets us apart is the Precision Content® Authoring Methodology. This is a robust and systematic content life-cycle solution that helps to separate content into its component parts making it easier to read and use. Precision Content makes content clear, usable, and precise.

Bring the power of microcontent into your organization.

Be first. Be innovative. Be ready.

precisioncontent.com

more-info@precisioncontent.com

1 (647) 265-8500

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