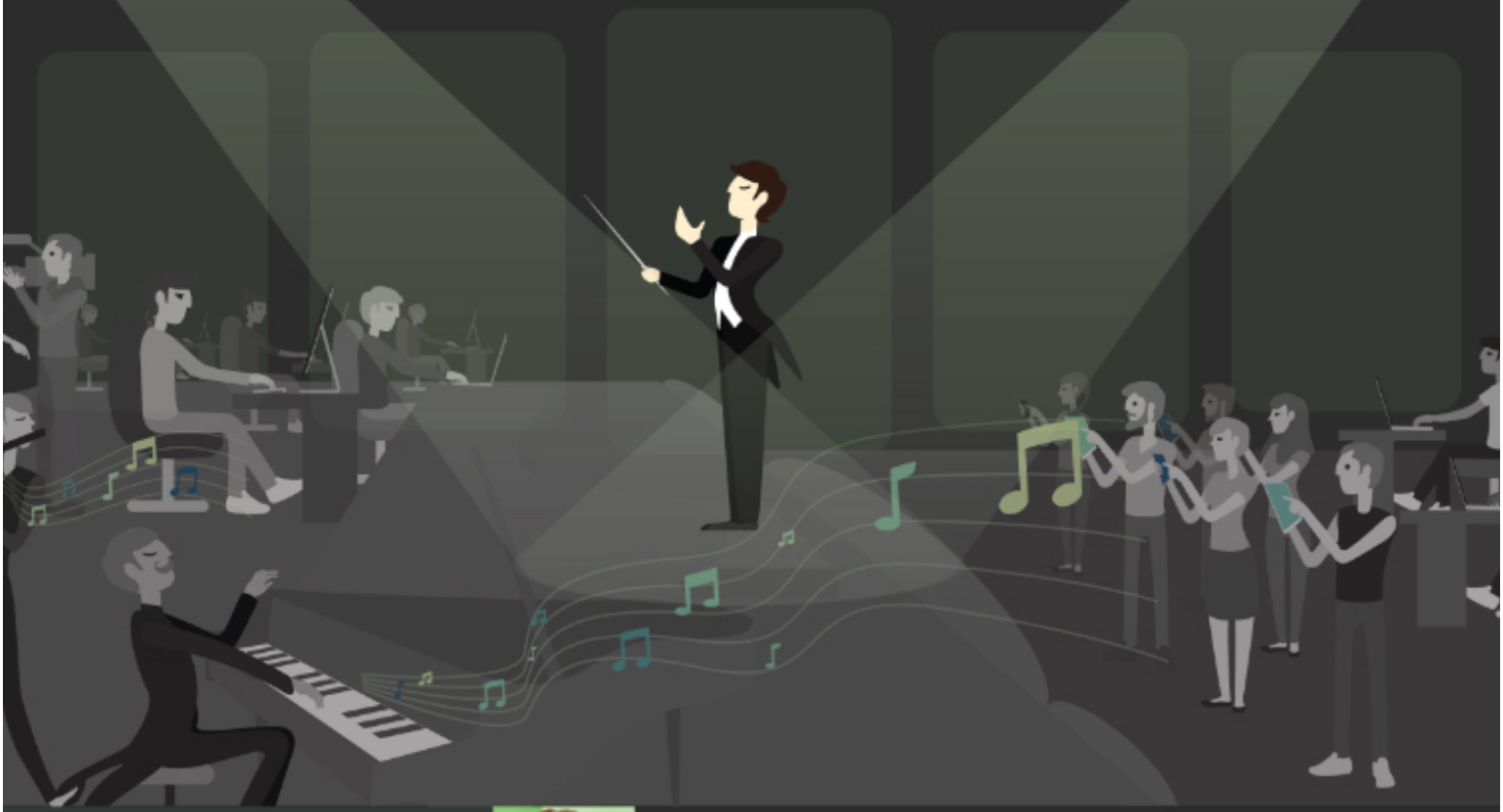
THE SIMPLE [A] TEAM PRESENTS

CONTENT ENGINEERING

FOR A MULTI-CHANNEL WORLD



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SIMPLE [A]

CONTENT ENGINEERING
FOR A MULTI-CHANNEL WORLD:

Enabling the Next Generation of Customer Experiences

An eBook by Simple [A]

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Pre-Release Version December 2014

Special thanks to:

[A] Partners, clients and friends that have provided insight and case studies to inform the premise and structure of this eBook including Mark Baker, Jenny Magic, Steven Grindlay, Noreen Compton, Byron White and James Williamson.

The Content Strategy community, whose earnest efforts at evolution has produced the content engineer and the many sub-disciplines of our field.

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INTRODUCTION

Content engineers organize and shape the structure and application of content within technical environments, especially digital media.

This eBook focuses on *content engineering for marketing*, specifically for digital customer experience management (CEM) across multiple channels.

Content marketing gets more sophisticated every quarter. Content marketers and content strategists now create intimate, personal experiences with content in real-time. Market leaders structure content, personalized for unique users and designed for multiple screen sizes across multiple channels and numerous devices. The technology unlocks the experience. Content enriched with structure, metadata, schema, taxonomies and other markup can be called *intelligent content*. And content engineers are masters of intelligent content.

Content engineers connect content strategy and creative with platform technology. They understand both the technical implementation of the content, and the imperatives of marketers or other business stakeholders.

WHY WE WROTE THIS EBOOK

Content engineering bridges business strategy and content strategy with the technical implementation in large customer experience management initiatives. But today content engineering is largely missing or under-resourced. Ignoring such a key part of the continuum introduces major risk into digital engagement projects. The lack of content engineering functions inside of project teams directly correlates with the number of failed or sub-par CEM implementations. We wrote this eBook to help turn the tide and increase success rates and effectiveness of large digital projects that deliver content.

Also, we believe in content freedom. "We've got content but it's not accessible," is an often-heard refrain. Content gets buried in content management systems, locked up in unstructured content blocks. Free the content!

We aim to accomplish three key goals with this eBook: introduce the value and function of the content engineering role, review content engineering process and deliverables for customer experience management, and persuade readers to adopt content engineering into their own processes.

WHAT TO EXPECT

This eBook introduces the discipline of content engineering and explains how content engineers are impacting digital content and customer experience management. We look into how content strategy and content engineering fit together, examine the differences between content *strategy*, content *engineering*, and content *management* , and we discuss why you need all three disciplines.

Key discoveries include:

What is content engineering?
What does a content engineer do?
Who makes a good content engineer?
Why you would want to add content engineering to your development process?
How do we justify content engineering effort?

DISCLAIMERS

Even though we advocate assigning a specialized content engineer role, we are keenly aware that process changes and expertise make content engineering work, not the title.

Not everyone needs a content engineer. Usually it's larger organizations, institutions, governments, and other more advanced marketers. Organizations must start with solid content strategy. Content engineering represents the next level of maturity. Invest in content strategy, CEM platforms and infrastructure, analytics, conversion optimization, and other critical elements first. Then add content engineering.

PART 1: CONTENT ENGINEERING DEFINED AND IN CONTEXT

THE TRAGIC STORY OF DIGITAL BRIDGE AND DYNOCORP

Let's start with a story. It's fiction, but based on fact. Names have changed to protect the guilty. But echoes of this story ring out in the hallowed, award-lined hallways of preeminent agencies, and glass-walled conference rooms across the corporate world.

The story starts out happily enough.

Digitalbridge has long been involved with interactive marketing, since interactive meant static websites and Flash applications. They've grown their resources to include content strategists, interactive designers, developers of various specialties, talented traffic coordinators and account executives, and multiple content creation specialists. Now they handle many digital channels, including social, mobile applications, paid search and display advertising networks, video, and the web.

Their client Dynocorp, a healthcare giant, needed to grow patient volume and improve customer experiences across multiple touch points. Dynocorp was suffering through an infrastructure originally built in 2003, and an old school CMS that made publishing content to the website difficult, let alone the hurdles it imposed when publishing out to their email campaigns, mobile apps, intranets, and subsidiaries. The site had been redesigned in the past two years, but the underlying platform was unsustainable.

The agency's plan: overhaul Dynocorp's core messaging, revamp the aging website, go mobile, update the marketing technology platforms starting with a customer experience management software foundation, migrate everything to a single-source content repository, build in personalization and introduce marketing automation.

Dynocorp had 10's of thousands of content IDs in their existing content management system, and hundreds of thousands of visitor sessions per month. The content audit alone took three people a month to complete. But Digitalbridge felt they had a good understanding of the content, and a clear plan forward.

After an extensive selection process, Digitalbridge and Dynocorp chose a sophisticated customer experience management platform to deploy, involving significant capital expenditures on licensing and training costs.

It was a large project, with Dynocorp marketing, IT and Digitalbridge stakeholders all involved.

For the new website and CEM platform, Digitalbridge staffed a fairly normal project team, led by a content strategist, designer, and multiple developers. All talented and all deeply experienced with interactive.

They followed a fairly normal process, one that had worked well for more than 10 years: discovery, strategy, design, develop, test, release.

The content strategy phase went well, and the Digitalbridge team produced compelling new messaging, user personas, user journeys, and defined calls to action and conversion points. They audited all existing content, performed a gap analysis, and created a forward-looking content matrix that planned all the new content needed in all forms. They built a voice and tone document, devised an editorial workflow and rolled out content authorship standards and training among content contributors at both Digitalbridge and Dynocorp.

After content strategy was complete, Digitalbridge started creating designs. The Creative Director had been recently steeped in conferences and books that emphasized designing flexible interfaces that address needs of mobile users first and foremost, so her team created wireframes and designs that started with mobile, and were beautifully responsive to all devices and screen sizes.

Dynocorp was thrilled with the designs, and the project was going swimmingly.

Then came development.

The creative team worked closely with the front-end CSS developers to realize the responsive designs into markup. The CSS was modern and elegant, built on a well-known framework, and executed very well. That markup was handed off to the development team along with an IA, wireframes, the content matrix, and high-level functional specifications. The functional specs described what users would do when, and how various interfaces needed to work.

It was all very logical.

The marketing team's intention was to setup the platform for personalization. They wanted to build a COPE (Create Once, Publish Everywhere) single-source content repository, and employ content reuse of various types of content across email, desktop, and mobile interactions, and use the content as part of marketing automation workflows.

And yet, the actual results were disastrous.

The implementation ended up shipping over nine months late, with very little of the expected functionality.

So many iterations were necessary, and much rework. Much back and forth ensued between developers and stakeholders. Developers always seemed to miss the point, and vice versa from the developer perspective. "Pass the buck" set in. It exhausted everyone to the point they were all sick of the project by

the time it went into production. Creative and technical teams were at odds and barely talking (one developer quit in the middle of the project), and everyone was suspicious of each other and the promises of customer experience management.

Dynocorp content authors became deeply unhappy with their new unwieldy platform. Content authors were expected to work with large WYSIWYG (What You See Is What You Get) unstructured content blocks. They had no way to relate content.

Marketers inside Dynocorp felt betrayed. They had been sold the Customer Experience Management platform and its marketing automation features. They had been excited about the ability to reuse content from the website to segmented email promos and targeted offers to different groups of users. One member of the marketing team, a conversion optimization specialist, was planning a/b testing that was ultimately not feasible due to limitations in the structured content. The developers had ignored personalization requirements completely (claiming lack of definition). What little structured content that did exist delivered a poor author experience and included none of the variations needed for personalization.

The Digitalbridge developers, all highly-paid and experienced, felt both overwhelmed and misunderstood. The development team was handed high-level content strategy documents, a far cry from build-ready specs, with little to no definitions around the platform configuration. There were no lead scoring rules, personalization variants, content reuse requirements, and no specifications around the search experience outside of a wireframe of one page of search results. So instead of being able to start programming at the handoff point, the Digitalbridge developers inherited what was ultimately a long business analysis and configuration requirements exercise that added lots of frustration, and lots of time, to the project.

The creative team and content strategy team thought the technical folks simply didn't get it, and secretly wished they had "other ones." They spent huge mental capital conceiving targeted messages directed to persona groups. Now those messages were impossible to deliver, and they ended up stuck with static, generic messaging.

Dynocorp stakeholders felt they had been sold a bill of goods – ending up with a pretty new face, with not a lot under the hood. The mistake had a price tag upwards of $1 Million in hard costs, but far more in opportunity costs, and lost market position.

The massive competitive market advantage they thought they were buying (at significant cost) did not exist. Dynocorp ended up with a mediocre new version of what they had for last the decade, with a creative uplift. The real value of the capital asset they purchased was far lower than its cost, and yet the heavy spend depleted budgets and kept them stuck with the poor implementation.

And, after all the effort, the CEM platform they purchased sat underutilized. Maybe 15-20 percent of its capabilities were in use. And for the few people that realized how much wasted value was residing on Dynocorp servers, fear of more terrible implementation headaches prevented action.

Ultimately, COPE is what they did, not how the content platform worked.

The teams still kick the ball forward little by little today.

Little does either Digitalbridge or Dynocorp know, but a few changes to their process and the addition of an additional project role would have changed the entire project, the ROI, everyone's happiness during the project itself, and the long-term strategic value of the Dynocorp's CEM investment.

Enter: the content engineer.

A Definition of Content Engineering

Content engineering is the discipline of organizing and shaping the structure and application of content, especially digital media, within technical environments.

Content engineering makes customer experience management possible, by making content intelligent enough to transform, enabling content personalization across multiple delivery channels.

Content engineering remains an emerging specialty within organizations.

Content engineering functions often are fulfilled by other specialists such as content strategists or authors, or technical staff charged with implementing content-rich datasets within content management systems (CMS), and customer experience management platforms.

Content engineering introduces "…rigorous discipline to the design of content and associated technical and business processes" says Joe Gollner in "The Language of Content Strategy" (XML Press, 2013)

Content engineering emerges at the intersection of strategy and implementation:

- Content now must often be shaped in discrete, structured formats for various use in multiple channels, including desktop, tablet, mobile, search engine results, and print interactions.
- Content must have structure and intelligence, so it may transform during delivery into personalized and targeted versions of content types.
- The sophisticated reuse of content requires thoughtful architecture and planning.

Stakeholders in charge of digital strategy have realized there are critical tools, capabilities, and staff competencies missing in their groups. Marketing leaders have content-laden agendas, but without content engineering they are unable to successfully implement their strategies.

Content engineering addresses dual sides of the Customer Experience Management equation. Content engineers involve the perspective of groups involved in the production of marketing strategy and content (Publishing and Editorial staff, Marketing, Sales, HR), and more technical departments (such as Software Development, or IT). The content engineer is a facilitator and mediator. Putting content to effective use in digital environments requires a depth of understanding in regard to the issues and processes on both sides.

Content engineers inhabit many roles:

- Analyzing information requirements and content sources
- Modeling content structures, schemas, and semantics
- Correlating content using taxonomies and other metadata
- Determining validation criteria, and designing information delivery
- Customer Experience Management platform technology selection and configuration, CEM lifecycle planning, CEM implementation specifications, marketing automation workflow planning

Content engineering can also include:

- Structuring and modeling metadata
- Implementing content and validation processes
- Designing information interactions
- Designing content management regimes, workflows, reporting and user support services
- Content reuse planning, adaptive content strategy, and content personalization architecture
- Audience and session-based analytics personalization rules and scoring, validating content targeting against user task success
- Multisite content reuse, syndication, and content API definitions
- Faceted search planning, and onsite search experience design
- Author experience (AX) design, standards definitions, content migration planning, validation, localization

To truly understand content engineering, one must understand that content engineers ultimately make personalized customer experiences possible.

Content engineers make content intelligent.

Content engineering disciplines impact every industry, business unit, and technical environment that works with content. Every interaction with content shapes experiences, grows knowledge, and ultimately moves our economy and society forward. Digital marketers depend on content to inform and influence behavior. And digital marketing platforms increasingly require intelligent content that can relate to other content, reshape itself, and syndicate outside the content management system. Marketing effectiveness increasingly hinges on delivering compelling content, in various forms, personalized to customer preferences and devices.

Content Management Makes Way for Customer Experience Management

Years ago, we used to talk about content management systems tied together with marketing automation software and customer relationship management software (CRM) as the answer to almost all digital marketing challenges. Today customer experience management shapes the delivery of content

throughout digital channels. Tied together with personalization and many built-in marketing automation workflows, CEM has started to transform digital, multi-channel marketing. CEM is an intelligent, contextual and predictive approach to delivering engaging and effective content.

CEM platforms are replacing old-school CMSs, which only focus on slinging around bulky unstructured content blocks. CEM incorporates content analytics, testing and optimization to refine the delivery of content, and provides the ability to deliver content experiences across different channels drawing from one elegantly designed, single-source repository of intelligent content assets.

Orchestrating the Multi-Channel Experience

Providing relevant content across multiple channels gives customers a continuous, high-signal, valuable experience with your organization, brand, or message.

The era of the monolithic desktop website has passed. The desktop web browser now provides just a single view on a much broader digital experience customers have with organizations. And the channels continue to expand.

Consumer marketers have caught on. For example, a representative of Marriott told a recent content management conference it's moving toward "omni-channel experiences including mobile, kiosks, signage, in-vehicle experiences and the overall on-property guest experience." Enterprise, non-profit, education, healthcare and government communicators are not far behind.

CEM enables the businesses to meet the customer's immediate needs by delivering the right content, at the right time, to the right person, on the right device. While this might sound trite to experienced content marketers, underneath is a change built on the significant concept of working from outside in, starting first with the needs of customers.

The content is the experience. The channels are the context. The customer is in control.

Customer experience management focuses the operations and processes of a business around the needs of the individual customer. Content strategists and content engineers find themselves at the forefront of the customer experience revolution.

Customer Experience Management Needs Both Content Strategy and Content Engineering

True CEM is possible only with content strategy, responsive design, content engineering, content authoring for adaptive content, and a technical implementation that supports personalization.

Content strategy (CS) defines strategic direction, messaging, personas, voice and tone, personalization strategy, editorial process, and sets the pace for all key content development and repurposing.

Content engineering (CE) defines the content structure, metadata, content reuse planning, taxonomy and other content relationships. This includes syndication strategy, search engine optimization (SEO) factors, semantic web schemas, and implementation planning for the CEM platforms.

Content authors build adaptive content variations, within the structure of the content model, for context-based content targeting.

And the developers make it all happen, building on the structures defined by the CS and CE roles.

All team members are critical factors for successfully delivering nimble customer experiences.

CEM is not a software purchase, it's a process.

The CEM platform licensing by itself, while essential, does nothing to drive organization or customer value. It's all in the strategy and implementation.

Marketers and content strategists know that content consumers can't and won't engage with content unless it is convenient, useful, easy to absorb, enjoyable and available on demand on the device the consumer has with them.

Content engineering unlocks the doors to a customer's cross-channel exposure, interactions and transactions with a company, product, brand or service.

Personalized customer experiences start with content strategy and become real through content engineering.

How Content is Changing

Everyone talks about the need to produce effective content.

The slogan "Content is king" is embraced by marketers, SEO experts and social media practitioners. Another more precise version proclaims, "Relevant, compelling content is king," underlining the importance of relevance to individuals. "Context is queen," advises another adage, speaking to the value of personalization. But the King and the Queen need a castle in which to live and administer their kingdom. Content engineers build the castle.

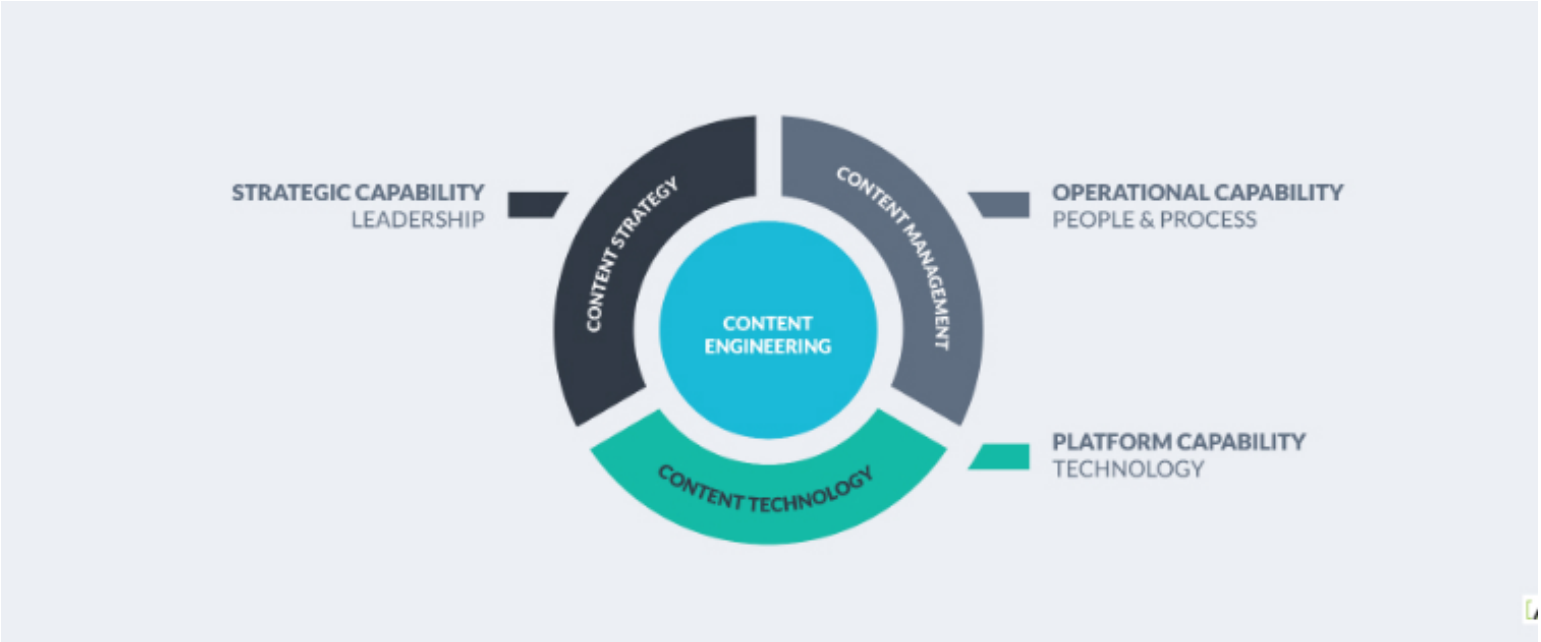
While mass numbers of marketers scramble to crack the golden content marketing egg, it is key to remember how much high-quality content gets lost in the millions of new articles posted every day on the Internet. More recently, Digital Buzz reported a total 2 million blog posts per day. That's an astounding amount of content with which to compete.

Yes, marketing depends upon compelling content. But even the best content and the most expert marketing efforts must address making sure users can see, understand, and act on the content.

Users are increasingly accessing content, offers and social spaces on multiple devices throughout the day. Smartphones matter, in all sizes. Tablets matter, in all sizes. App stores and native mobile apps matter. Search engine results matter. Social matters. New devices and channels are around every corner, making the landscape more complex every quarter.

To reach diverse channels that content consumers use, every content asset must adapt. Whether text, video, images, tabular data, or audio, content and metadata must meet consumers on the consumers' terms.

Content creators must transform their mental models.



The static web page is a dated notion. Influencers no longer present the same content to everyone. The right strategy means creating content that lives a relevant life among different individuals, and which delivers different experiences to unique people who see the world through their own needs. Authors and publishers must create content composed of specific components with precise roles, defined by independent attributes. That structured content, when married with responsive interfaces, becomes flexible to multiple resolutions, functional across multiple browsers, platforms and device types, reusable in native mobile applications, and compatible with all the new ways of consuming relevant information that come along each year.

Think of components as functional pieces of content that can be called together to form an overall content piece. A component (or content "element") can be a headline, a teaser, a pull quote, an image, a bulleted list, and may be a shorter and a longer version of content.

The discipline of content engineering synthesizes complex, disparate content technologies and strategies. Content engineering structures messages so they can be orchestrated for reuse across multiple media.

The content engineer develops a cohesive implementation strategy incorporating adaptive content and responsive design.

Content engineering has evolved into an independent role, because the content engineer is able to bridge the integration gap between content strategy, content management system planning and platforms, and customer experience management technologies and initiatives.

Adaptive content and responsive design are the super chargers in the personalization engine, the keys to customers.

Content engineers hold the keys.

PUT THE CE IN CEM

Content Engineers make customer experience management work.

It's time for agencies, in-house departments, and marketing leaders to recognize the necessity of the content engineer as a role on their teams, and add content engineering into standard process workflow.

The reason we do not see more successful stories of customer experience management in the wild has everything to do with the missing content engineer. Content modeling, metadata, structure, reuse, personalization mapping does not happen magically on their own. They are born of hard work, insight and experience. Yet so many current development processes either are ignorant of the need for content engineering process, or assume content engineering essentials will emerge from the integrator or software development team.

When organizations put together content strategy, CEM platform capabilities, and the know-how to engineer content to enable personalized customer experiences, they start to see the promise of CEM start to manifest.

The reality is we cannot keep shoving customer experience management projects into 2005 web development process shoes. The shoes don't fit. It's not 2005 anymore. Content strategists and developers can't do it all. The landscape is complex, and gets more complex by the day. Put the content engineer into customer experience management.

WHAT CONTENT ENGINEERS DO

Content engineers map content inputs to customer experience outputs. They tie content strategy to content delivery, and improve both in the process.

Blogger and content engineer Mark Baker explains content engineering like this on his blog, EveryPageisPageOne.com:

> "Content management takes content as an input, while content engineering produces content as an output … A content engineer is someone who understands the computability of content: how content can be generated, derived, and manipulated by algorithms."

He continues:

> "Content engineering is not content management any more than manufacturing is warehousing. Content management is about the management of content after it has been created. Content engineering is about how content gets created."

In sum, the role of the content engineer emerges at the intersection of strategy and implementation.

Stakeholders in charge of digital strategy have realized there are critical tools, capabilities, and staff competencies missing in their groups. Marketing leaders have content-laden agendas, and only slow down for lack of content engineering talent to realize their strategies.

Content engineers see both sides of the equation, both from the perspective of a group involved in the production of content (Publishing and Editorial staff, Marketing, Sales, HR) to more technologically-oriented departments (such as Software Development, or IT).

Putting this content to use in digital marketing and other content interaction environments, requires a bridge of understanding in regard the issues and processes on both sides.

We have engineered the publishing process, and we have engineered the management process, but, by and large, content is still created ad hoc and chaotically. This undermines, complicates, and slows the downstream management and publishing functions. Content cannot be managed, adapted, linked, or published reliably because it is not consistent or properly identified. This was tolerable when we delivered static content to paper, and even to the Web. But when we are attempting to deliver responsive, adaptive, personalized content, it causes real difficulties and imposes real costs, not least of which are the cost of lost opportunities to connect with customers in the most effective and timely manner. Only by engineering the inputs can we improve the way we manage and create the outputs we need.

Mark Baker – Content Engineer, Blogger everypageispageone.com

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There's a much bigger picture to content engineering, which looks beyond customer experience orchestration. At a deeper level, content engineers organize and model knowledge relationships. A truly elegant content model and taxonomy works far beyond customer touch points in digital interactions and into the heart of operations. Content engineering, when expressed through rich schemas such as Darwin Information Type Architecture (DITA) can organize the way an enterprise represents knowledge within itself and in its ERP, CRM, DAM and other operational systems. But for this eBook, we will stick with the impact of content engineering on CEM.

History Lesson Part One: Content Strategy Evolving

We will dive into content engineering specifics, but first let's take a look into the history of the evolving practice of content strategy.

As an open platform, the Internet provides infinite options from which to choose. It has forever broken the monopolistic hold on audience attention once claimed by television, radio and print media. While freeing to consumers, the democratization of publishing shifts engagement challenges from media outlets to individual content owners and creators. Marketing departments have become publishing houses.

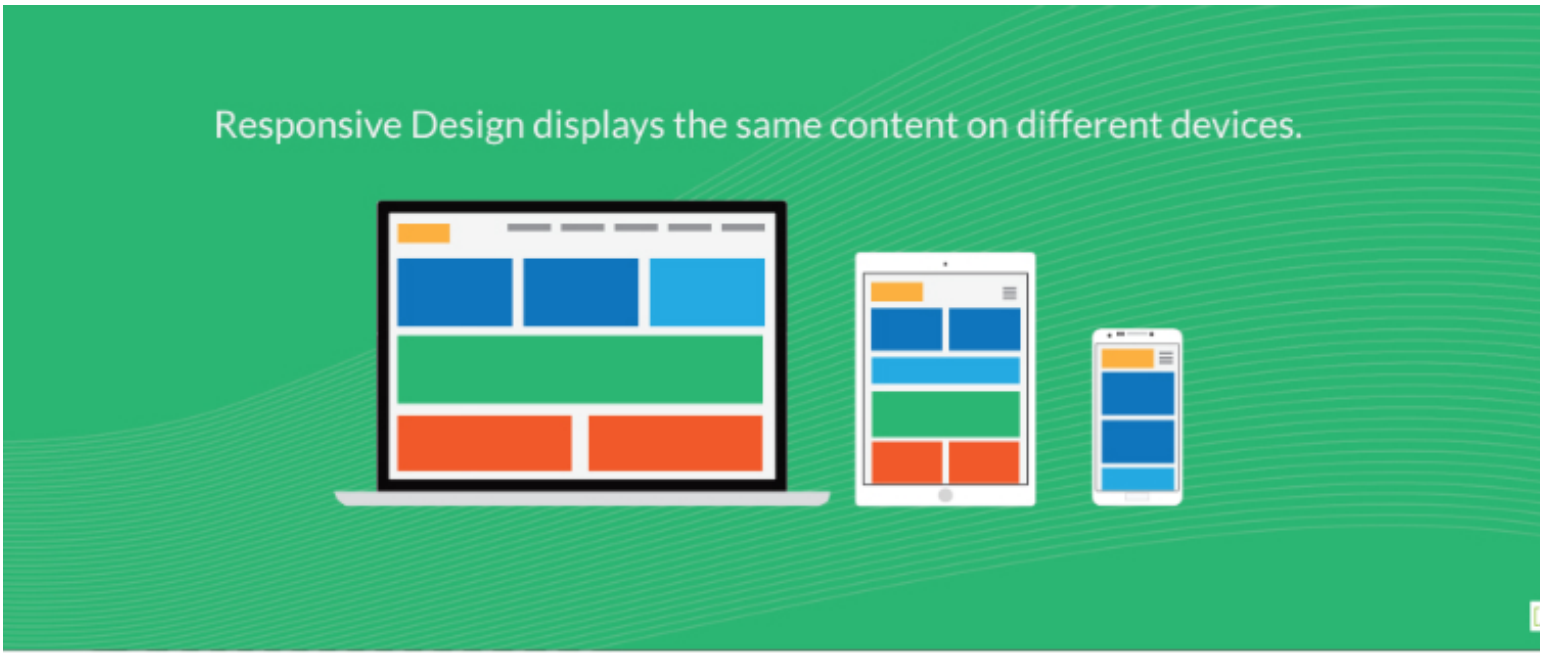
The attention game must now be played in a whole new way with a whole new strategy – a content strategy.

The concept of content strategy as a critical competency needed to deliver relevant interactive customer experiences was pioneered by Rachel Lovinger in her ground-breaking 2007 post "Content Strategy: The Philosophy of Data." Then in 2009, Kristina Halvorson developed the core framework for content strategy in her book "Content Strategy for the Web."

Halvorson defines content strategy as "the practice of planning for the creation, delivery, and governance of useful, usable content." She explains that a winning content strategy answers, "What content do we need to create and why? How will the content be structured? How will users find the content? How will we get from here to launch? What's next once the content is 'out there'?"

Since the release of her web-oriented book in 2009, an incredible amount of change has happened affecting content. iPhone and Android phones exploded in popularity, the iPad has emerged as an important channel, and now numerous new watch and glasses devices from Apple, Google, Samsung, FitBit and others herald a new era of wearable interactive devices. Numerous other outlets for mobile content continue to raise the bar, including appliances, cars and houses placing greater and greater demands on adaptability.

Today, investing in content strategy does not distinguish a company in and of itself. If the strategy is going to have a fighting chance to succeed long term, content it uses will need to be spot-on relevant,



appear at the right time and in the right channels, and adapt to users' specific devices, interests, demographics and behaviors. Not an easy task.

Mobile interactions now dominate digital marketing. Most marketers have already seen mobile traffic eclipse desktop traffic as the primary engagement vehicle for content interactions. And thus is born the need for not just a desktop, single-channel content strategy but a multi-channel, adaptive and responsive strategy and implementation approach.

History Lesson Part Two: The Dawn of Adaptive Content

The year 2012 saw two key books address mobile content strategy and introduce the practice of "adaptive content strategy".

Authors Karen McGrane and Sarah Wachter-Boettcher both published seminal books explaining how a well-thought out adaptive content strategy is key to mastering the multi-device future of user experience and content delivery. Neither author invented the field, but they certainly codified it and rallied a movement.

Karen McGrane's "Content Strategy for Mobile," coined the term "adaptive content strategy." Then Sarah Wachter-Boettcher published "Content Everywhere: Strategy and Structure for Future-Ready Content." Both these books address the complex issue of how to manage content beyond the desktop and the web page, and they both underscore the value of an adaptive content approach.

Adaptive content personalization frees content from the presentation layer. It treats content as discrete components of information with key attributes defined, not blobs of content with mashed together features.

> *"Adaptive content is more than just 'mobile.' It means getting your content into a format so you can share and distribute to any platform you want. It means you can get your content onto platforms you control — and platforms you don't."*
>
> *Karen McGrane "Content Strategy for Mobile."*

Sarah Wachter-Boettcher argues for the need to adapt to the new ways of the web in her blog post "Change is hard. But it's our job" at sarawb.com:

> "As our content is increasingly shifted and reshaped for different devices, laid out dynamically, sent to third parties, or combined with other data, I believe we — the people who know the content best and have dedicated our professional lives to making it meaningful, relatable, and helpful — have a responsibility. We must ensure **that** content — the content that's mashed with Google Maps, that's shown as related or personalized, that's delivered in automated ways of all sorts — is as carefully considered, as natural, as it can possibly be.

Sara's comments above underscore the importance of separating content into discrete components, allowing the flexibility to organize the content appropriately for all devices, personas, uses and product scenarios.

She continues:

> "We can't manually control all the different ways our content might be used and seen. We don't know when our users will want to save our content via Instapaper or Pocket. We don't even know which devices they'll be toting around next year. What we do know is that we're going to increasingly rely on what I loosely refer to as robots: machines that make decisions on our behalf about how content is displayed, shared, and accessed. And the more we can understand those 'bots, the more we can help them make choices that feel editorial, considered, human."
>
> Sarah Wachter-Boettcher at sarawb.com

"If we structure content appropriately and agnostically, we will be ready for whatever comes next," notes Meghan Walsh, Senior Director of eCommerce Platform System Management for Marriott.

Part 2: Personalization and Multiple Channels

We are all in the Attention Business

With studies showing the modern information consumer literally has less attention span than a goldfish, marketing into the glut of words and images coming at people nowadays can seem nearly impossible.

Yet consumers have more control over information consumption than ever before, and are coming to expect more and more personalized relevance to interactions.

Marketers are on a mission to earn attention, and they do so by build engaging experiences.

Content engineering provides the handles for directing attention. Underlying structure and intelligent content can be directed in ways that dumb content blocks cannot, in order to direct attention intelligently. Content engineering invests energy up front, to empower content with intelligence for its entire future lifetime.

A Look at How It's Done

Brands must be prepared to create and deliver content for many platforms. They need a good return on investment, and to not waste money optimizing multiple separate devices and content packages. Content engineering provides the structure that enables content to perform effectively on all platforms.

First, define content types and content elements

Begin by defining the content types within the content at hand. A content type can be a product description, an article, a recipe or a sales page. Each content type is composed of content

elements or modules such as a headline, a sub-headline, a teaser, a block quote, bulleted lists, tables, and images.

Second, create a content model

A content model describes how content types and elements relate to each other. For example, imagine creating a content model for a food site that features recipes. The content model to support this site would include content types such as cuisine, recipes, ingredients, menus, events and holidays. The content model describes types of content and exposes content interactions and relationships. Defining content elements within a content model then also includes details such as how many characters will story summaries be limited to, whether to include sub-headlines or not, and what type of characters are valid for each content type. It provides the framework that organizes the content elements and encapsulates decisions about the content so that they can be accessed in different ways.

Third, add a content taxonomy to support the content model

The key to supporting content reuse, and adaptive content for personalization across multiple devices and screen sizes lies in creating a content taxonomy.

A content taxonomy is in the metadata layer added to content types and elements that instructs the content management system what to do with content when it is delivered to various device types or types of users, including rules for when to display certain categories and navigation elements.

Beyond taxonomy, content engineers also establish additional metadata definitions, schemas and XML to apply to content types and express in the markup, and other approaches to enriching content with intelligence and context. Such topics are beyond the scope of this introduction.

Adaptive and Responsive, What is the Difference?

The terms adaptive content and responsive design are often confused and used interchangeably. While a few key differences exit, a winning content model must have one or the other; and can have both.

Responsive design flows elements on a web interface to adjust automatically, and without user prompting, to fit any available dimensions on any device. Responsive makes beauty in small spaces. And big ones. Starting with the same presentation code. Code once, display everywhere.

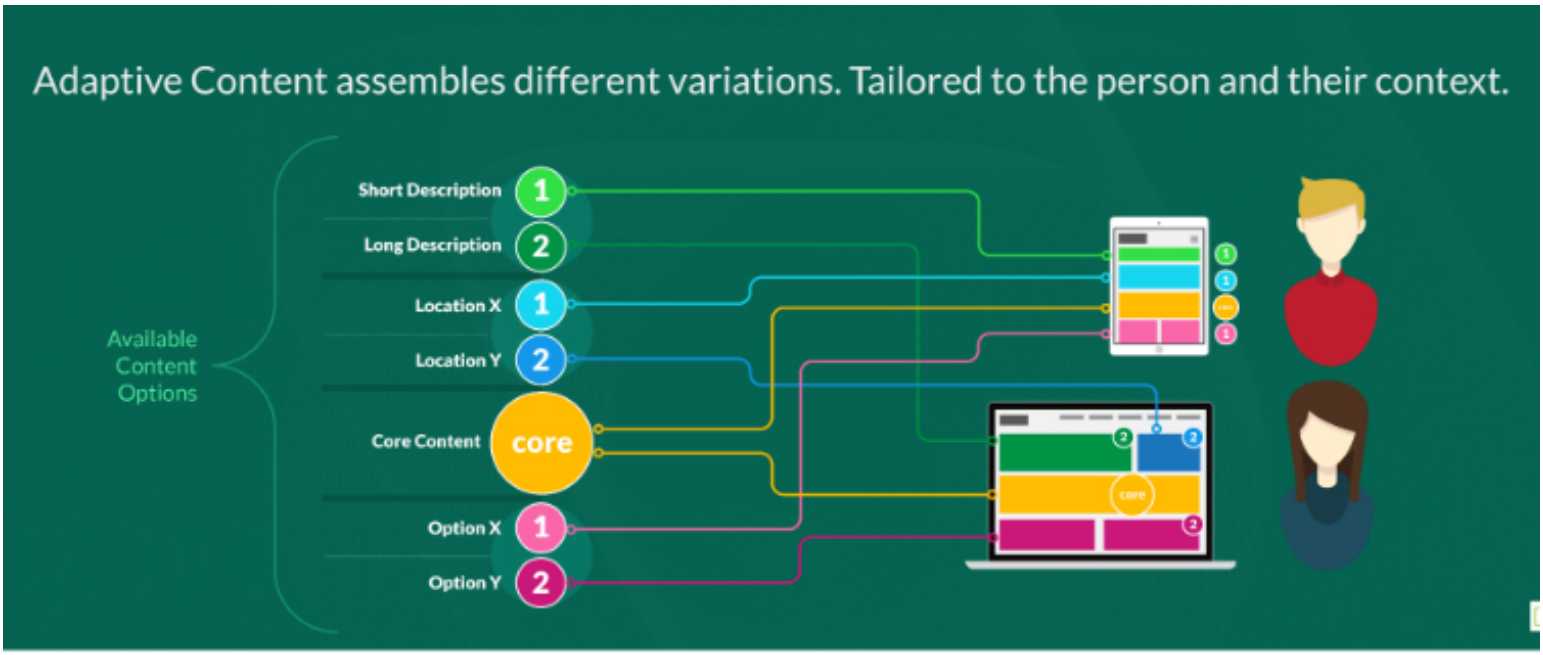
Similarly an adaptive content approach identifies each device and then delivers the best version of the *content*, based on the size and capabilities of each device. But adaptive approaches also can adapt content based on user types, user behavior, and other clues about user intent and interest. Adaptive content can be published broadly beyond the website, to native applications and content syndications using a custom content API.

"Adaptive design represents a design that easily adapts to devices. It also means that content is designed in a way that a system can serve it up to multiple devices albeit in slightly different ways."

Kevin Nichols and Donald Chestnut in "UX for Dummies"

The key difference between adaptive content and responsive design is that adaptive content not only presents content to match different device types, it can also send completely different versions of that content to different devices and users.

- **Responsive design** changes the presentation, but the content delivered to the browser remains essentially the same.
- **Adaptive content** takes responsive design a step further, by indicating how to prioritize content on various devices and form factors, even when the same content is delivered to all devices.
- **Adaptive content** provides greater relevance to customers and brands because it makes content:
    - **Selective**: showing only what's needed at a given time
    - **Specific**: showing the variation with the exact information relevant to context, such as geo-location relevant information
- **Personal**: showing information tailored to user's expressed preferences (attitudes toward content and brand) and goals (behaviors interacting with content and brand)



Adaptive or Responsive?

Where to invest? The answer depends on business goals. For content experiences needing to reach the widest audience possible, and interact with that audience through personalized interactions, adaptive content architectures become necessary. And responsive interfaces should be a given for multichannel publishing. So, do both.

An adaptive approach requires more resources to implement but offers adaptive content offers cost-efficiency though content reuse and targeting. An elegant content model unlocks the value of static content items, and lets the content live concurrently in multiple websites, applications, email, and print forms.

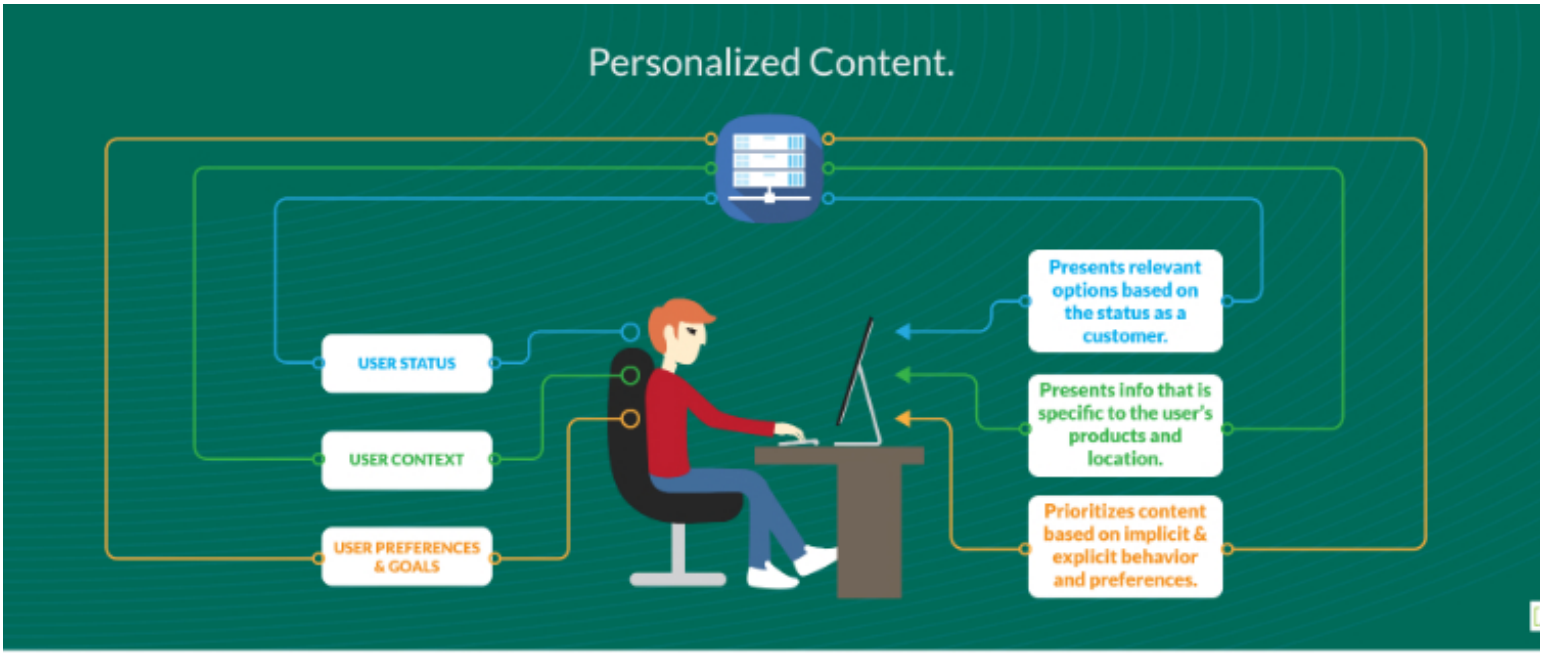
So, adaptive takes publishers far beyond the flexible interfaces possible with responsive design by itself. Adaptive enables a world of content concurrency, where content lives in multiple places at once, and parallel publishing, where content can be pushed throughout the channels instantaneously.

Implementing responsive design alone offers organization a less complex and a more affordable choice.

"Adaptive approaches mean that you structure your UX so that it can easily adapt to multiple channels. In many cases one size does not fit all."

"Responsive design is not a content solution that accounts for when different content surfaces on a mobile website then on the desktop."

Kevin Nichols and Donald Chestnut, "UX for Dummies"



Organizations, in time, will find the need to embrace both responsive design and adaptive content.

Decision makers should drive to the most future-friendly approach: a flexible content model, a strategy that draws the best from both an adaptive content approach within a device-responsive interface. Organizations should design content systems for both. Content engineers juggle the details.

Prescriptive and Adaptive Personalization: Keys to a winning content strategy?

To help customers get the relevant content they seek, several approaches to personalization have been developed that utilize the different information available. Content engineering improves the accuracy and relevance for each of these approaches and insures that content adapts to content consumer needs.

Prescriptive personalization is an umbrella term for approaches that help to ensure site visitors have an enjoyable and productive visit to a website. Like the maître d' who always knows his customer's name and favorite table, personalization can make users feel just as much at home and keep them coming back. And just like the waiter who suggests his diner's favorite dessert, a great personalization strategy can lead prospects right into that sweet spot that benefits both the customer and the bottom line.

How does this impressive wizardry happen? Set up rules-based business logic within a website that triggers changes within the 'static' content display. These changes are triggered by user behaviors, interactions and insights. User insight is obtained from multiple factors including customer profiles, preferences, site activity, user behavior, search engine, time of day, geo-location, seasonality, personas, known interests and many more.

Perhaps better known are the sub-types of prescriptive personalization:

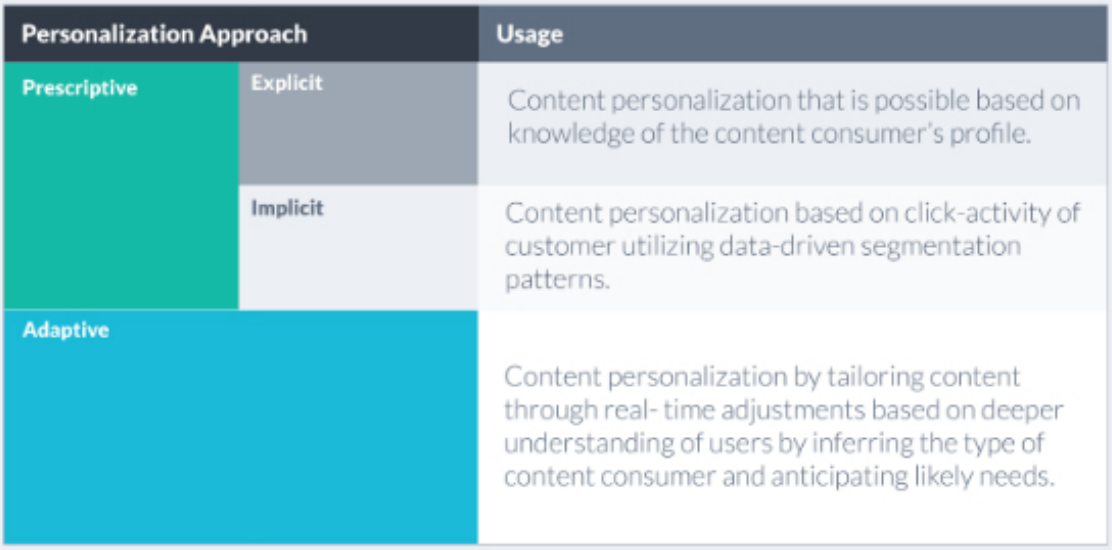
- Explicit Personalization
- Implicit Personalization

With **explicit personalization** a visitor profile or shared user information determines what content a user will see, while implicit personalization responds to monitored and tracked user behavior and presents content with the goal of delivering the most useful content to the user based on known, as well as immediate, behaviors.

Implicit personalization, also known as "behavioral tracking" (because it monitors and responds to user click streams), is often favored between the two; unlike explicit, implicit does not rely on a user to log in or provide any details but relies on what the users' behavior implies about their visit.

"Recommendations are also a type of intelligent content, and these are defined by when a piece of content is viewed and other content is recommended based on what is viewed."

Kevin Nichols and Donald Chestnut in "UX for Dummies"



Personalization Approach		Usage
Prescriptive	Explicit	Content personalization that is possible based on knowledge of the content consumer's profile.
	Implicit	Content personalization based on click-activity of customer utilizing data-driven segmentation patterns.
Adaptive		Content personalization by tailoring content through real- time adjustments based on deeper understanding of users by inferring the type of content consumer and anticipating likely needs.

Adaptive Content and Personalization

Now pair the idea of an adaptive content approach with personalization and the power of the combined is evident --- immediate understanding of the user, and the ability to dynamically adapt content based on a user's clicking activity and interests. Furthermore, implicit personalization can filter the content displayed from third party applications as well.

Thus, it is no surprise that Adaptive Personalization emerged on the web content management system (WCMS) horizon. Adaptive personalization leverages user types based on user models to analyze, predict and trigger rules on the fly to display content. This is an ideal approach for organizations that can benefit from personalization but that lack the in-house resources to support traditional personalized content.

Selecting a Platform for Content and Customer Experience Management

Today's content management system vendors do not resemble their former selves. Leading platforms today are designed at their core to support adaptive content and responsive design, and employ personalization built around key user personas and user behavior. They enable content strategy to engage users with enhanced personalization, marketing automation, and precise targeting across multiple devices in the customer's overall long-term journey. They offer advanced session analytics, a/b testing, and other tools for optimization. The best web CMS systems still make content administration relatively easy to use, even with the sophisticated heavyweight CEM and marketing automation functionality.

Choosing a CMS / CEM platform is a decision to be made carefully. The CEM platform is not only a major part of digital marketing operations, but today it is a major part of core business operations including sales, support, recruiting, ERP, and other functions essential to the enterprise.

The most sophisticated CEM platforms, such as Sitecore, Kentico, and Adobe, are all embracing sophisticated content analytics, user behavior analysis, site personalization, and dynamic content optimization. Used together, this enables multiple points of contact beyond the website, including native iOS, Android and Windows mobile applications, email marketing, syndicated content distribution, search engine results pages, and integration with social networks.

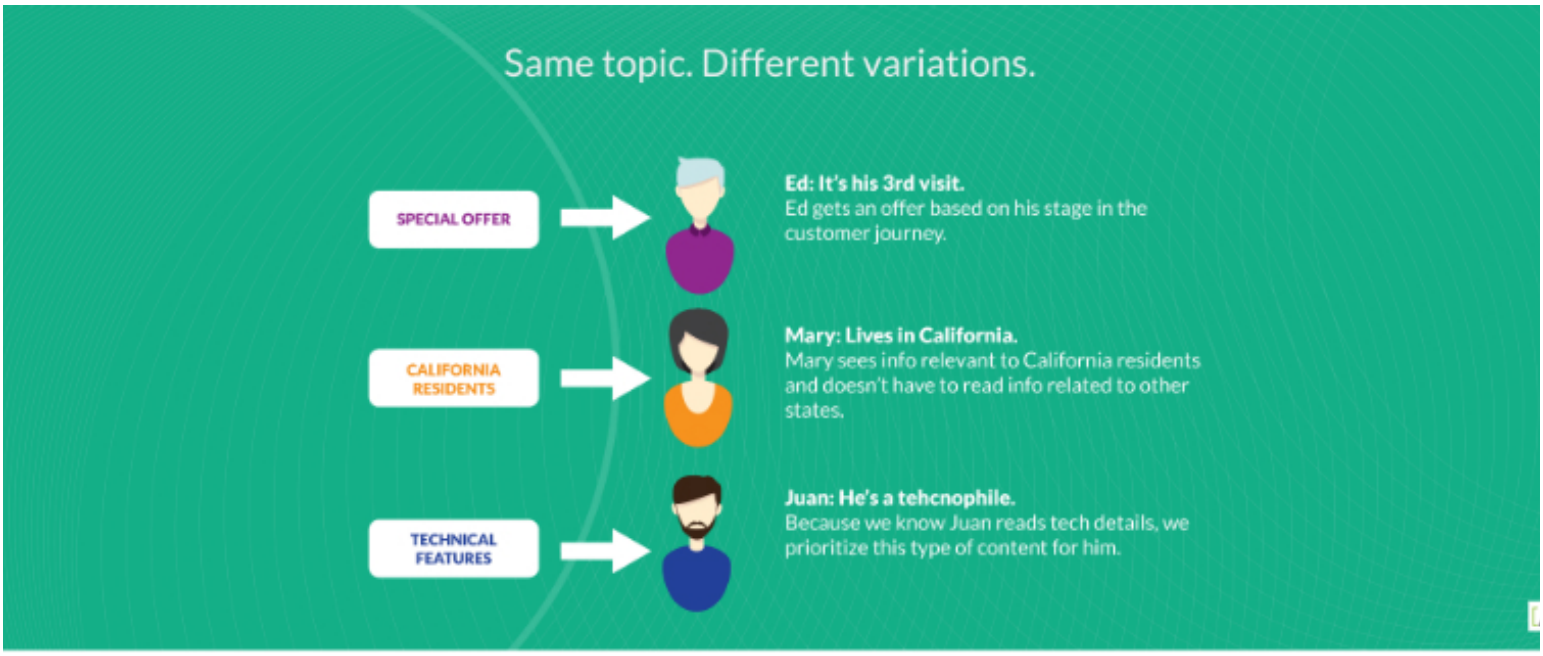
The CMS platforms that once simply presented chunky WSYIWYG web content blocks are now managing customers' experiences across multiple mediums. Today, these systems have evolved into Customer Experience Management marketing and relationship lifecycle interaction platforms.

When assessing a new system, [A] suggests using an established process to evaluate platforms. This includes engaging relevant departmental stakeholders, creating evaluation scorecards complete with desired tools and criteria, running proofs of concept and employing unbiased references.

For detailed instruction on how to implement a platform selection process read [A]'s white paper, *Determining Your Needs: Simple Steps to Choosing the Ideal CMS*.

The Difference Between Content Management, Content Strategy & Content Engineering & Why You Need All Three Disciplines

To understand the difference between content management, content strategy and content engineering, it helps to start with the basic component: content.



Content is made up of the building blocks used to deliver effective information. This asset is planned and created, designed and reused. However content becomes most powerful when it is able to appear in specific contexts, and like a chameleon alter its placement and appearance to influence others.

Content management plays a key role in that it works behind the scenes like a traffic cop directing workflows where editorial and production intersect. This includes controlling security, recovery, rollback, and reuse of existing content.

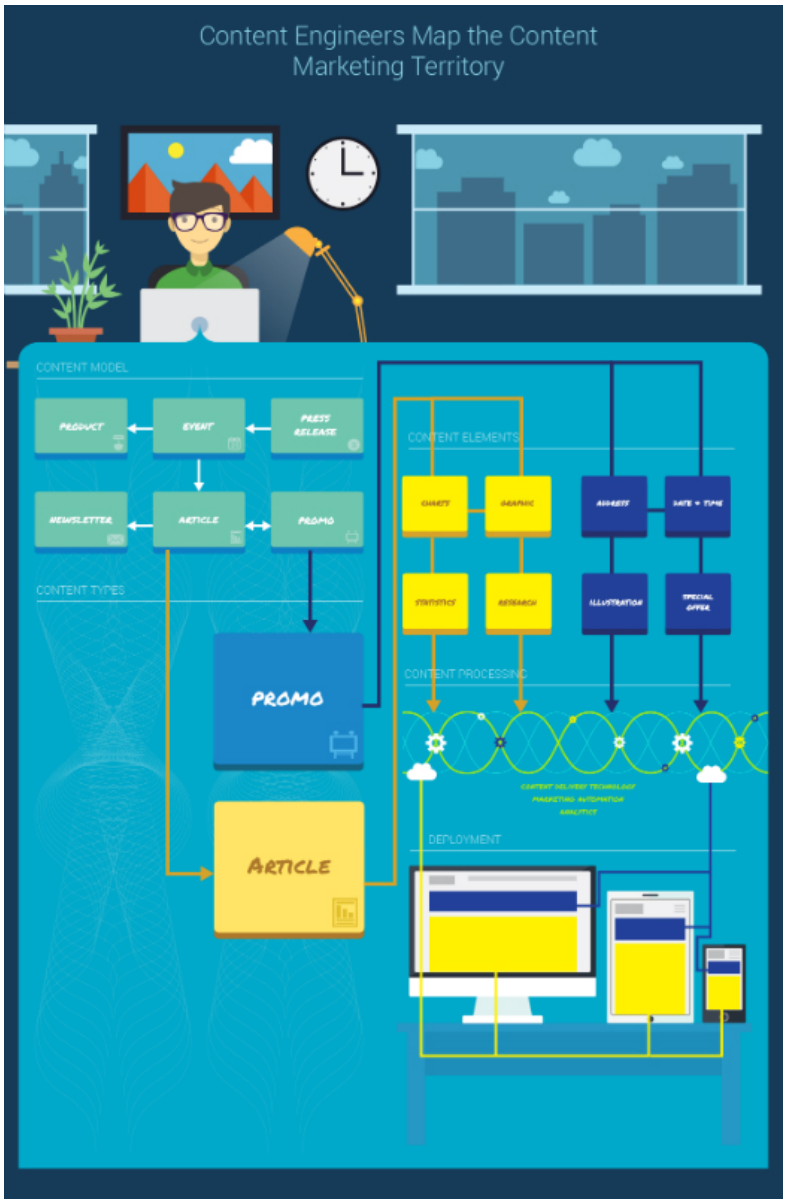
Thus, supporting content management is content technology. Content technology is comprised of all the systems and software platforms used to create, store, manage and process content. Together with content management, the pair are best leveraged when governed by a well-defined content strategy.

A content strategy outlines how content resources and technological capabilities will work together to coordinate, integrate and apply content for maximum usability and customer engagement. Content becomes a strategic asset able to be used to achieve concrete business goals. On a more simple level, a great content strategy defines, demonstrates and validates content requirements, and it justifies the investment in an organization's content.

Enter stage left, content engineering. Like a maestro bridging the gap between the sheet music and the instrument, content engineers bridge the gap between the content strategy and the technology supporting it.

PART 3:

WHERE CONTENT ENGINEERING FITS



Content strategy sets the vision for *what* content will perform which functions.

IA/UX structures the navigation, layout, and utility for content and functionality.

Content engineering is about *how* content gets to customers.

Content strategy is concerned with knowing the current state, and envisioning the future state of the content experience, and defining internal content operations.

Content engineering is concerned with translating higher-level content goals, business requirements and marketing objectives into technical specifications that can be implemented.

Content engineering defines *how, when and for whom* to make the content available in different scenarios. It provides a detailed specification of the content that shapes what content authors need to create and update, and what content consumers view.

Content engineering maps the content models to the user experience designs, wiring up how various content types gets placed into what kinds of content displays for various channels.

Content technology developers are responsible for *implementing* against the specifications developed by the content engineer, creating functionality, integrating external systems, and then customizing the platform that ultimately *deliver*s content to the content customer.

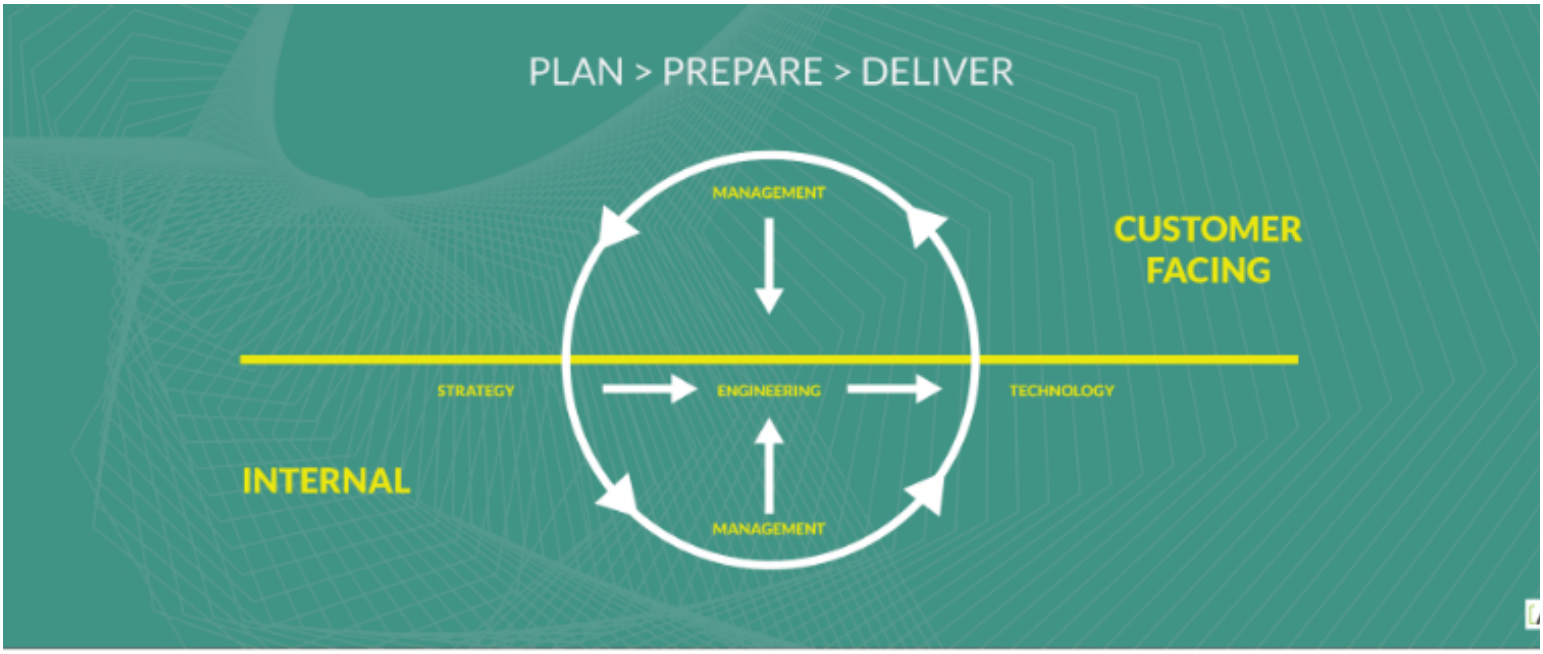
Together, these different functions work to manifest multi-channel digital customer experience management.

Relationships to other roles

Content engineers work closely with content strategists, and with developers. But the role of the content engineer is distinct from these other functions.

The content engineer translates what is wanted from the content strategy, and determines in detail how it can be done most effectively. He or she specifies how different audience segments should receive content, how different devices should display content, and how to specify content depending on up-sell or cross-sell potential. The content engineer develops a detailed content model and taxonomy that provides the framework for these capabilities to be implemented.

The developer will take the content model and taxonomy created by the content engineer, and use this to implement the functionality in code. Normally, the developer will not have the experience in audiences and marketing-oriented business requirements, or expertise building taxonomies or content structuring, and will rely on the content engineer to specify these requirements.



The content strategist, information architect, and content engineer all play starring roles in crafting personalized customer experiences.

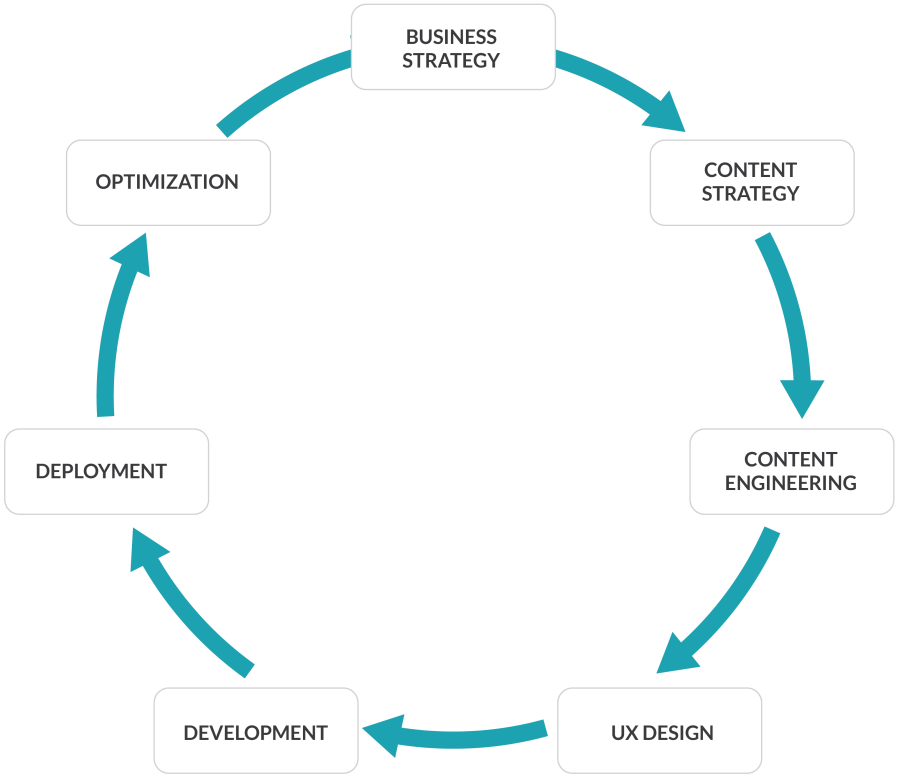
For example, the content strategist and information architect usually own primary responsibility for the information architecture, the traditional sitemap showing relationships between pages of content. In the CEM model, those "pages" of content often render very different content from user session to user session. So, it helps to have a content engineer in the conversation, helping plan out the experience with

the reuse of various content types, and making sure the CEM platform will eventually support the interaction model being proposed.

Likewise, the content engineer may be looking for ways to identify specific audience groups based on browsing behavior. If the information architecture does not yet support a deep enough navigational pathing approach, the CE and CS team may determine that the IA should expand to allow for better onsite behavior identification. With the content engineer in the picture, there is an advocate for content delivery systems helping facilitate an optimal structure for personalization.

THE CUSTOMER EXPERIENCE MANAGEMENT CONTINUUM

When looked at in linear flow, we see that rich, personalized customer experiences are born of a continuum of disciplines:



Content Engineering bridges business strategy and content strategy with design and implementation. Missing any part of the continuum introduces unsustainable project risk for CEM initiatives.

Where Content Engineering Fits

It takes simple changes to existing standard workflows to integrate content engineering.

So, adding in content engineering simply adds a role, minor process additions and some deliverables to existing process. Moving from static wireframes to interactive prototypes (using Axure or other interactive prototyping tools) has been indispensable for CEM. The prototypes become a meeting place for Content Strategy, IA/UX, Content Engineering, Design, and Development to meet and collaborate.

Adding content engineering need not disrupt years of careful process development and optimization; it augments and enhances existing process.

Skipping content engineering effectively removes the scaffolding for every implementation stage within an effective CEM initiative.

Some examples:

- Without a content model, UX designers and the CMS developers both guess at what content elements will be reused, how and when, often resulting in broken, inconsistent content types.
- Content authors get stuck into working with static chunks, taxing the authoring process and locking content up into unwieldy containers.
- Without a taxonomy and metadata model, the CMS configuration offers no related content organization outside a hierarchical set of content folders, essentially trapping content to an isolated location.
- Without identification, and incorporation of schemas and content standards into the implementation, content cannot syndicate across the Internet or be consumed and presented richly by important search engines.

For advanced content marketing, content engineering is not nice-to-have or optional. For effective customer experience management, it's essential.

Content Engineering Responsibilities and Deliverables

All content engineers have capacities for clear, incisive analysis coupled with the ability to see broad relationships and connections between concepts. In other words, content engineers can see the forest and the trees.

Content engineers add value to CEM projects both in terms of direct responsibilities and deliverables, as well as adding value by collaborating and helping facilitate deliverables from other members of the CEM project team. The collaborative, multi-disciplinary nature of CEM initiatives cannot be overstated. It certainly takes a village to architect nimble customer experiences.

A content engineer directly performs key roles within the overall CEM team:

- Content modeling
- Taxonomy development
- Metadata definitions
- Content reuse planning

- Adaptive content strategy
- Content personalization definitions and architecture
- Audience and session-based analytics personalization rules and scoring
- Platform technology selection and configuration
- Multisite content reuse and governance planning
- Content syndication structure and publish and ingest planning
- Content type mapping for CEM lifecycle applications integration (CRM, ERP, Marketing Automation, eCommerce)
- CEM implementation specifications (Widgets, User Controls, Layouts and Sub-Layouts, Templates, etc.)
- Faceted search planning, and onsite search experience design
- Schema strategy and structural rules
- Educate and train content authors on semantic markup, metadata, CMS use
- Structured content definitions
- Content template development
- Author experience (AX) design
- Standards selection, adherence
- Content migration and transformation planning
- Validation planning and specifications
- Content localization planning
- Content migration planning
- Marketing automation workflow planning and configuration

Content engineers collaborate on and support additional CEM functions:

- Legacy system business analysis
- Content audits and inventories
- Content transformation matrix
- Content conversion planning
- Content alignment and repurposing
- Content architecture
- Content authoring workflow
- Digital business process engineering
- Business requirements documentation
- User requirements documentation
- Design requirements specification
- Functional requirements specification
- UX prototyping and design
- User journeys
- Use case development
- Content API development
- Search engine optimization (SEO) strategy and planning
- Usability testing
- Native iOS and Android apps specifications for content consumption
- Develop technical proofs of concept
- Platform selection and configuration
- Database design and entity relationship modeling
- Audience targeting, segmentation, lead scoring and definitions
- Digital asset management (DAM) planning
- Copyright and attribution management planning
- Tag management integration
- Content author training
- Responsive interfaces
- Infrastructure and content delivery

Content engineering deliverables include all the output from the processes above including content models, structured data type definitions, taxonomies and their broader ontologies, metadata definitions, content templates, content migration plans, personalization plans, and CEM solution configuration

specifications. But the real measure for a content engineer's work is not in the artifacts she produces, but in the outcomes she facilitates.

[A] holds that the role of the content engineer is key to success for any complex content-centric project involving content production and software system development.

What Makes a Great Content Engineer for Customer Experience Management

Content engineers have a multi-disciplinary skillset, and emerge from diverse backgrounds. Content engineers come from backgrounds including full-cycle web development, project management, business analysis, requirements engineers, digital marketing, information architecture, content strategy, technical writing, software engineering, product management, or even liberal arts and philosophy. Some content engineers start in library science, linguistics, semantic analysis or other readily applicable language science backgrounds.

The most effective content engineers on customer experience management teams have at least some background as generalist web developers. T

- They might not be deep *coders*, but they understand and can work with CSS, JavaScript, HTML, and related responsive frameworks such as Bootstrap.
- They might not be deep *content strategists*, but understand the content strategy role and functions with some level of intimacy.
- They might not be expert *user experience designers*, but they understand information architecture, user heuristics, prototyping tools and approaches.
- They might not be deep *search engine optimization (SEO) specialists* but they understand how content, schemas, metadata, PageRank and content relationships influence content placement, structure and ranking within search engine results pages (SERPs).
- They might not be *software engineers*, but they understand the web and software development lifecycle (SDLC), the software and hardware stack that delivers web applications, and core application architecture concepts.
- They might not be *native iOS or Android mobile application developers*, but they understand how apps consume content APIs and send user generated content back to the CEM platform.
- They might not be *database administrators* (DBA), but they understand the basics of data modeling, database design, entity relationships, and the value of data structure and normalization.
- They might not be expert *digital marketers*, but they understand sales funnels, marketing automation, a/b testing, conversion optimization, and the importance of capturing and guiding user attention.
- They might not be *project managers*, but they understand project rhythms, structures, collaboration approaches, and they work well as facilitators and communicators.

While they are generalists in many ways, all content engineers consider themselves at least somewhat technically minded, and they can be trained on, and enjoy, fairly complex technical concepts.

As an aside, content engineers also tend to have strong intuitive spatial and geometric intelligence, the kind of brainpower needed for 3d modeling or architecture.

Of course the content engineer must be trained on content modeling, metadata structures, schemas, and taxonomy. These are the currencies used to facilitate content relationships.

For customer experience management, it's important that content engineers are trained on the CEM platform itself, and that they come to understand CMS configuration, management, and administration skills. They must have great facility in operating the destination content display environments, so they can readily structure content for intelligent, flexible reuse within those environments.

Content engineers naturally think across the hemispheres of their brains. Blogger Erik Bratt, explains in his blog "Why We All Need to Become Content Engineers," what makes a great content engineer:

> *"A content engineer is one part creative director and one part data analyst. They use both the left side of their brain and the right … Most importantly, they love data and use it to help plan, measure and optimize their content. They represent the evolution of content marketing, online marketing and inbound marketing."*

Great content engineers are multiplex thinkers, capable of pattern recognition among multiple strata, and multiple dimensions. Natural content engineers connect to the content strategy at a visionary level and map that strategy to all the enabling technologies. It requires diverse and broad thinking. Above all, content engineers are insightful and comfortable communicating between disciplines. They are able to use their cross-functional abilities to see relationships and build information structures others might find daunting.

THE EVOLVING CONTENT ENGINEERING ROLE IN THE ENTERPRISE

One of the challenges encountered in developing a content engineering program comes in defining the content engineer's role in comparison to the market's evolving definitions.

Many enterprises use the phrase "content engineer" to mean broadly different things, and content engineers themselves may not use the phrase to define themselves either. The market conversation about the role has been evolving rapidly.

The eBook focuses on the content engineer as a central role for enabling customer experience management, someone focused on making complex personalized digital interactions possible. But a casual job seeker exploring the field will find many divergent roles.

To sample some of the variation in responsibilities assigned to a content engineer, below are examples of four content engineering job responsibility descriptions from Apple, HP, Cisco, and IBM.

Apple - iTunes Content Engineer

- Reporting, monitoring and troubleshooting the ingestion/encoding pipeline for all iTunes store content.
- Working with iTunes business and engineering teams in developing content types.
- Communicating with production teams in planning for systems resources and tracking time-sensitive content.
- Analyzing workflows, filing detailed bug reports & QA test plans.

HP - ArcSight Content Engineer

- The candidate will be assisting other ArcSight Content Engineers developing and deploying content (rules, filters, reports, dashboard, etc.) on ArcSight ESM and writing Java applications plus some Python scripts to integrate ArcSight ESM with 3rd applications.
- Develop and test new content and use cases using ESM filters, rules, data monitors, active lists, session lists, dashboards, reports and trends
- Participate in developing monitored use cases within the Cyber Defense Center

Cisco – Content Engineer

- Learning@Cisco is looking for talented Network Engineers to take technical leadership in the design, development and production of Cisco Learning and Certification products.
- A prime candidate would be a Network Engineer with a minimum of Cisco Professional level of certification with expectations of attaining a CCIE Certification promptly and who possesses a minimum of five years of experience supporting production networks.
- Staying current with cutting edge and in many case pre-release technologies and products by working with the Business Units/Technology Groups.

IBM - Content Engineer

- DITA architect … build relevant content modules for various personas; understands the W3C Semantic Web …build ontologies…XML … working knowledge of JSON and related JavaScript systems, as well as OWL and SPARQL
- Understand the taxonomic and tagging challenges of managing and governing content on an enterprise scale…audience analysis/persona analysis…building content to meet audience information needs… progress prospects into clients and clients into loyal customers…experience with taxonomies and ontologies required, especially at the use case and requirements level.

As you can see, none of the above roles match exactly the definition of content engineer this eBook proposes. The IBM definition hews the closest. Just among four technology leaders, Apple, HP, Cisco, and IBM, content engineers are content developers, application developers (using Java, Python, and other languages), network engineers, and business workflow analysts.

One could convincingly argue the term 'content engineering' has little meaning due to its broad application. But yet, the underlying pattern reveals content engineering to require bright, broad-minded knowledge workers that can map semantics to technology intelligently. The enterprise sees the value in content engineering and the market continues to move towards uncovering and empowering the content engineer as a critical role going forward.

How To Incorporate a Content Engineering Practice

Once the organization is ready for content engineering, it must build a practice and center of excellence around content engineering skills, disciplines and process.

Building content engineering competence into any marketing organization can take any of several various approaches:

- **Find it:** directly hiring a dedicated content engineer or content engineering team
- **Build it:** cross-training content engineering skills into the development team
- **Contract it:** hiring external specialist consultants for a single focused effort

Content engineering isn't rocket science, but you are more likely to find rocket scientists than experienced content engineers in the current market. This is simply due to the early stage of CEM and the formative period of content engineering as a competency.

Recruiting a dedicated content engineer that has real full-cycle content engineering experience within a production CEM environment can be time-consuming and expensive. Possible, but it's not for everyone.

Most organizations will find that building a content engineering discipline best starts at home. Find the raw aptitude internally. Train the skills. Augment from the outside. And grow a content engineer, or multiple. Then start to document and build the practice around the newly minted content engineer(s).

To find a content engineer internally, consider staff aptitudes and interests, and introduce the concepts, seeing what resonates. Content engineers will recognize the role immediately, and gravitate to learning more and practicing in the space. You might find your CE in a Business Analyst (BA) or marketing analyst, or an experienced web developer that carries strategic and technical perspectives. Look for the interest and right matched background, and build from there.

Organizations can support the development of an internal content engineering competency by contracting training, support, and systems enablement with a consulting firm such as [A].

Partnering with a content engineering consultancy team ensures projects receive the knowledge and expertise of content engineers with a successful track record and a wide-range of experiences implementing adaptive content and responsive design across numerous platforms.

Whether building internally or contracting externally, build towards content engineering skills able to unravel the complexity of your disparate content technologies and strategies. The content engineer should become a pivotal component of your CEM process; working with internal marketing, agency creative and strategy, and platform and implementation partners. The content engineer ties every component together with the aim of orchestrating a personalized customer experience.

A group's content engineering competency will be confirmed when the team is able to cohesively implement a personalization and customer experience strategy built upon adaptive content and responsive design. The implementation team is able to bridge the integration gap between content strategy, content management system planning and platforms, and customer experience management technologies and initiatives.

Managing Content Engineering

Content engineers and content strategists are often senior members of the customer experience management team, but ultimately both should be integrated into the development workflow.

Teams where the strategists develop solutions working with business stakeholders exclusively and then simply issue them to the development teams are less likely to succeed than ones where content strategists and engineers are deeply integrated into the development cycle along with technologists, content authors, content administrators and other functions within the customer experience management continuum.

In terms of methodology, content engineering fits well into either an agile or waterfall development lifecycle. The nature of content engineering is a form of strategic planning, but with enormous dependencies on the platform and developers involved. Because of the tight alignment between strategy, and application development, integrating everyone into a single workflow ensures communication and integration of disciplines.

For more traditional waterfall cycles, content engineering can be considered a phase following content strategy, and then running concurrent to development.

In general, for agile teams, a Scrum methodology seems to work well. Content engineers get integrated into daily team standups; they also work against a backlog, and tackle work in sprints. They can see their inputs mapped to outputs, and influence ad-hoc decision-making on the part of development teams. True content engineers enjoy collaboration deep in the trenches of the project.

It's important for organizations contemplating developing a content engineering practice to understand that CE adds significant time and cost up front, but saves even more time and cost on the backend.

Whichever methodology is chosen, just know that content engineering is iterative and collaborative, and best played as a team sport.

How to Cost-Justify Content Engineering

Content engineering is a critically vital piece to the customer experience management puzzle that no one knows they need until it's missing at the end – when it's too late.

If content is electrical power, content engineering provides the wiring. When constructing a building, would you add beautiful lighting fixtures, powerful appliances, and power outlets but no electrical wiring to connect them? No transformers to move current from one state to another? Inconceivable, and yet the number one complaint we hear from agencies, integrators, and in-house marketing departments is that executive decision makers do not understand content engineering and are not willing to pay for it.

Let there be light.

Here are a few of the reasons that executives must embrace investments in content engineering:

1. **Far more efficient development cycles and developer time investment**
   Without content engineering, we are asking software engineers to spend time on configuration and strategy rather than developing software. This makes highly-paid software engineers much less efficient then they could be, and lengthens development cycles significantly while reducing quality in CEM projects.

2. **Efficiency of CEM license cost investment, more value for the money**
   CEM software is expensive. Implementing it poorly is even more expensive. Leaving valuable marketing functionality underutilized carries opportunity costs. By investing in content engineering, the return on investment (ROI) for CEM accelerates, while effectiveness improves.

3. **Insurance policy for CEM long-term**
   Even If utilization of all potential customer experience management strategies is a far-off dream compared to the current level of maturity in the marketing department, having a well-engineered content platform in place ensures CEM is possible. Without that strong platform, CEM will always be a far-off dream.

4. **Improved sales lifecycle, sales performance, sales metrics, and sales channels**
   Content engineering influences sales directly by connecting buyers with the related content and

products most interesting to them. It also enables segmentation of content types and creation of detailed reports showing content engagement and its relationship to sales. Of course, content engineering also facilitates multi-channel publishing which expands selling channels.

5. **Improved customer satisfaction**
   Content personalization significantly improves the customer's experience with the enterprise, by making their interactions more relevant and rewarding. It's only through intelligent content engineering that true content personalization is possible.

6. **Marketing and IT peacemaking: happier developers, happier marketers**
   Without content engineering, content strategists and marketers find themselves frustrated with vision left un-realized. IT teams feel frustrated with what they see as tone deaf and ill-defined requirements from marketing. Content engineering remediates some of those issues, and helps create a better, more effective working environment for customer value delivery.

7. **Competitive market advantage**
   Content engineering makes organizations smarter, in a very real way. It improves the value of content assets across the enterprise, and connects those assets with customers intelligently. Smarter organizations with more nimble content assets will be better prepared to compete for market position and customer mindshare.

Challenge and Call to Action

Content engineering should have a place in your organization. It just takes some simple actionable steps, a bit of advocacy, training, and some trial and error.

CEM desperately needs content engineering. Seek to highlight the valuable role of the content engineer, lead the discussion on content engineering in your organization. Join the mission to make the content engineering role and process a mainstream norm.

You can introduce the concepts and start collecting perspectives from marketing, IT, C-suite executives, and partners, all of which can feed into a feasibility review.

Consider:

- How can you help streamline your customer experience management projects with a content engineering function?
- What can you do to help introduce and highlight the value of the content engineer in your organization?
- Who among your existing team would be appropriate to cross train as a content engineer?
- What would need to change in your current process to include content engineering?
- What problems will content engineering avoid in projects? And what benefits will it in your environment, and how can you communicate those advantages?

The long-term rewards to building a content engineering competence in your organization will far outweigh the costs.

The best time to start is the present. If you're active in social media, consider using #contentengineering in related online conversations.

Content engineering isn't easy, but it can become simple – once you get started.

– END –

[A] Trains and Empowers Content Engineers

At its simplest, [A] is a distributed technology consulting and training company that focuses on content engineering and content management systems integration.

At the essence, [A] simplifies complex technology for agencies and institutional clients. We anchor our skills around content engineering and content technology, but our agents are multi-talented and get called upon to deliver related consulting, training, application development, architecture and strategy engagement.

In marketing language, [A] delivers powerful web content management and content marketing platforms. [A] orchestrates complex implementations which make it possible for websites, mobile applications, and other digital marketing touch points to become living, breathing entities that change and flex nimbly with different users, behaviors and marketing objectives.

Agencies, healthcare, government, non-profit, higher education, advanced marketing departments, and public sector entities have long turned to [A] to engineer the intersection of content strategy, content management, and content marketing platforms, systems and technologies.

[A] specializes in strategic support for building content engineering into organizations, and tactical services including content engineering, CEM platform integration, technology, training, and custom development, and web analytics.

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SELECTED CONTENT ENGINEERING TERMS

Adaptive Content: The structuring and logical modeling of content elements so that views of content presented to customers are generated dynamically to match their needs and the goals of the brand. Adaptive content is enabled through content engineering, and allows content to be more specific to what is required to support a task, selective in responding to the user's context, and personalized the preferences and needs of an individual.

Adaptive Personalization: Providing personalization to an individual based on inferences about what type of user they are, and their needs, and adjusting these inferences in real-time based on user behavior.

Content Elements: A content type is composed of a collection of elements. Each element has a unique name and defined validation criteria. An element is similar to a field in a database, but can hold narrative text or other types of media in addition to numeric and string data, and may have different business rules associated with it. The validation criteria define what kinds of values an element holds. For a recipe, the content elements would include a recipe title, recipe description, calories, time to prepare, a photo of the dish, a list of ingredients and associated quantities, and a list of steps to produce the recipe. These different elements hold different data types: images of the recipe will need to be in a specific image format, the cooking time will be in a time-based format, and the Caloric Value will hold numeric values.

Content Engineering: An approach to defining the attributes of content and their value to different individuals in different scenarios, so as to optimize the relevance of content to customers and maximize the effectiveness of content for brands. Content engineering enables adaptive content and personalization.

Customer Experience Management (CEM): the delivery of content and other services around the needs of the customer. CEM is enabled through various technology platforms and related tools that analyze and respond to the needs of different users.

Content Management: The operational processes supporting the content life cycle, including policies, procedures, workflows, permissions, and editorial activities. These operations are supported by content management systems (CMS).

Content Marketing: The promotion and delivery of marketing content to customers, most often through social media, search engine marketing, and email marketing. Content marketing often relies on customer segmentation that is tied to how desirable a customer is as a sales prospect (qualification scoring). Some forms of content marketing use marketing automation tools that automate basic tasks such as sending follow up emails.

Content Model: the Content Model presents all the different content types you will have for a given project. It shows a detailed definition of content types, their elements, and how they relate to each other. This allows content engineers to understand the content requirements related to configuring the CMS. A solid content model guides the design of content components, assemblies and linkages. It can illuminate what content to write or create, and how to input it into the CMS.

Content Taxonomy: A content taxonomy classifies content topics within a hierarchical structure. The taxonomy provides a standardized, hierarchical vocabulary to describe content in a consistent way through metadata. Taxonomy metadata can identify content items for re-use, allow creation of personalization, help with search, optimize storage, and streamline site changes and overhauls.

Content Technology: All technologies needed to support the customer content experience. While the foundation is the Content Management System, other technologies include tools to support analytics, content testing (such as A/B testing), optimization, personalization, as well as the presentation of content and media to different channels such as smartphones, kiosks, or tablets.

Content Types: Content types are standardized, re-usable content objects or entities that are presented to audiences. They present coherent pieces of meaningful information made up of different content elements. Some examples include recipes, press articles, events, job postings, and product descriptions, and can also include more specialized objects such as a list of recommendations. Each content type shares a common set of attributes (i.e., all recipes will contain ingredients, all job postings will contain a job description.) A content type describes the expected attributes and behaviors for a specific kind of content, which can vary according to business requirements.

Form Factor: In computers, the form factor is the size, configuration, or physical arrangement of a computer hardware object.

Metadata: Metadata is "data about data". There are two (metadata types), structural metadata, about the design and specification of data structures or "data about the containers of data"; and descriptive metadata about individual instances of application data or the data content.

Native Mobile Apps: A native mobile app is a smartphone application that is coded in a specific programming language, such as Objective C for iOS and Java for Android operating systems. Native mobile apps provide fast performance and a high degree of reliability.

Omni-Channel Experiences: Retailers are meeting the new customer demands by deploying specialized supply chain strategy software that provides a seamless approach to the consumer experience through all available shopping channels, i.e. mobile internet devices, computers, brick-and-mortar, television, radio, direct mail, catalog and so on. Retailers use an omni-channel approach to track customers across all channels, not just one or two.

Prescriptive Explicit Personalization: Providing content to an individual based on rules that reflect information available from profiles.

Prescriptive Implicit Personalization: Providing content to an individual (who may be anonymous) based on how their clicking behavior matches the behavior of others who seem to belong to the same behavioral segment.

Presentation Layer: The style or presentation layer is how the document will look to your readers. This layer is defined by the CSS or styles that indicate how your document should be displayed and on what media types.

Responsive Design: The presentation of content so that the same content will display in an equivalent manner on many devices of different sizes and screen resolutions (for example, desktop, tablet, and smartphone.) The approach does not change the content, only the display of it.

Schema: In computer programming, a schema (pronounced SKEE-mah) is the organization or structure for a database. The activity of data modeling leads to a schema.

UX (User Experience): The design of interactive experiences to be usable, useful, and enjoyable. The design of content plays a central role in UX. The term is largely synonymous with customer experience.