

Deloitte.



Media Solutions:
Autolocalization with Generative AI

Deloitte AI Institute™

About the Deloitte AI Institute

The Deloitte AI Institute helps organizations connect all the different dimensions of the robust, highly dynamic and rapidly evolving AI ecosystem. The AI Institute leads conversations on applied AI innovation across industries, with cutting-edge insights, to promote human-machine collaboration in the “Age of With”. Deloitte AI Institute aims to promote a dialogue and development of artificial intelligence, stimulate innovation, and examine challenges to AI implementation and ways to address them. The AI Institute collaborates with an ecosystem composed of academic research groups, start-ups, entrepreneurs, innovators, mature AI product leaders, and AI visionaries, to explore key areas of artificial intelligence including risks, policies, ethics, future of work and talent, and applied AI use cases. Combined with Deloitte’s deep knowledge and experience in artificial intelligence applications, the Institute helps make sense of this complex ecosystem, and as a result, deliver impactful perspectives to help organizations succeed by making informed AI decisions.

No matter what stage of the AI journey you’re in; whether you’re a board member or a C-Suite leader driving strategy for your organization, or a hands on data scientist, bringing an AI strategy to life, the Deloitte AI institute can help you learn more about how enterprises across the world are leveraging AI for a competitive advantage. Visit us at the Deloitte AI Institute for a full body of our work, subscribe to our podcasts and newsletter, and join us at our meet ups and live events. Let’s explore the future of AI together.

www.deloitte.com/us/AIInstitute



In today's dynamic landscape, media, advertising, and gaming companies are actively seeking innovative strategies to expand global reach while minimizing operational disruptions. This paper delves into the realm of Generative AI (GenAI) and its potential to transform content localization for these sectors. The conventional approach to content adaptation remains labor-intensive due to diverse languages, cultures, and dialects.

GenAI presents an emerging solution capable of expediting market entry, reducing costs, and automating localization processes. With the potential to revolutionize content production, distribution optimization, and audience engagement, GenAI could reshape the industry landscape. By examining applications such as text and voice translation, rights enforcement, and automated quality control, GenAI can remake content localization, tailoring content to diverse markets more efficiently.

Autolocalization's many applications across media, advertising, and gaming, are already making waves in the market. However, the implementation of GenAI comes with a spectrum of challenges, from ethical concerns to technical barriers and skills shortages. By piloting initiatives, addressing industry-specific challenges, and facilitating change management, organizations can better achieve GenAI integration.

“GenAI-driven autolocalization holds the promise of forging authentic connections, enhancing user experiences, and redefining industry standards.”

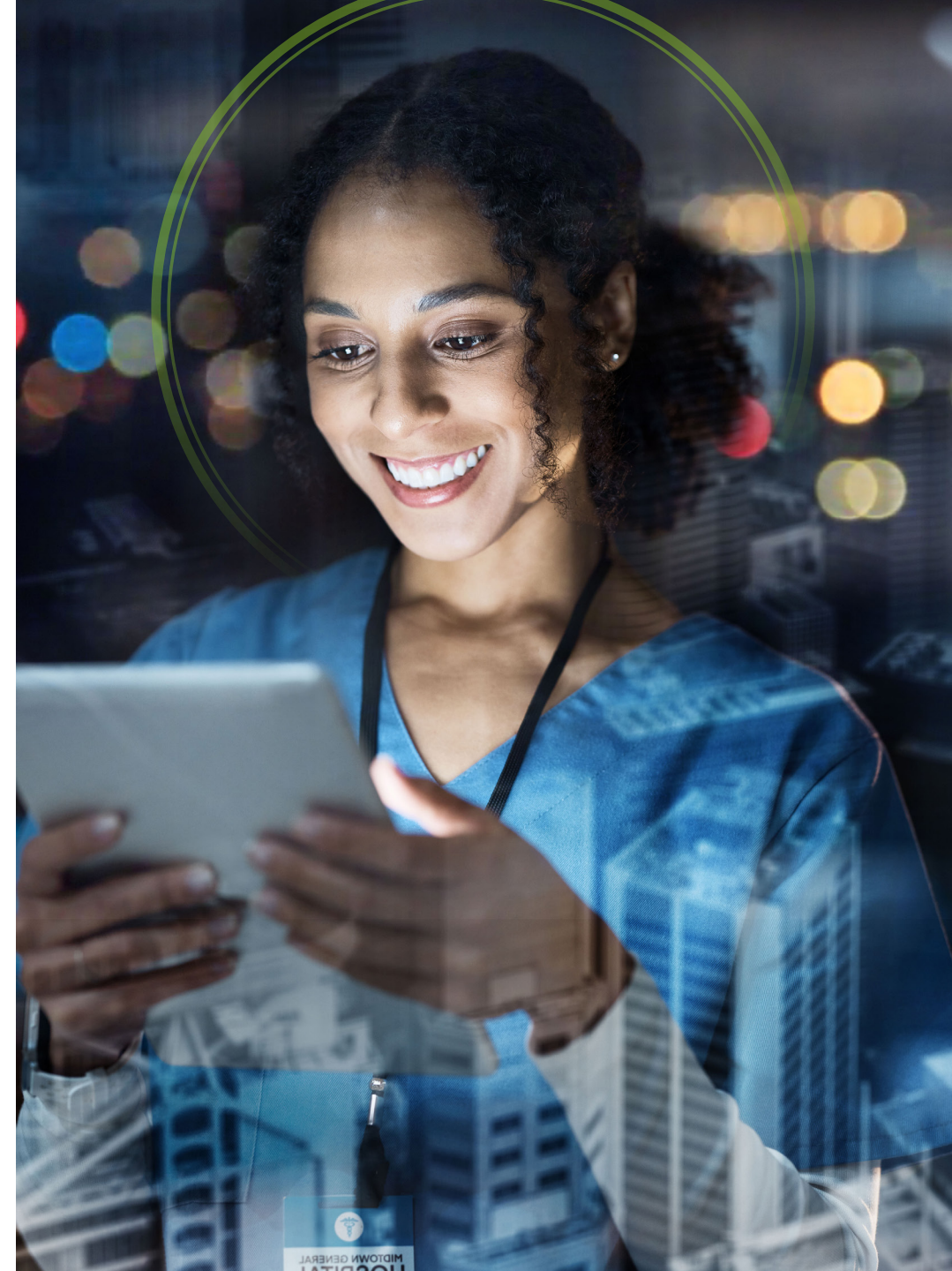
While challenges abound, the collaborative efforts of organizations will pave the way for a transformative future where technology and human ingenuity converge to reshape media, advertising, and gaming as we know it.



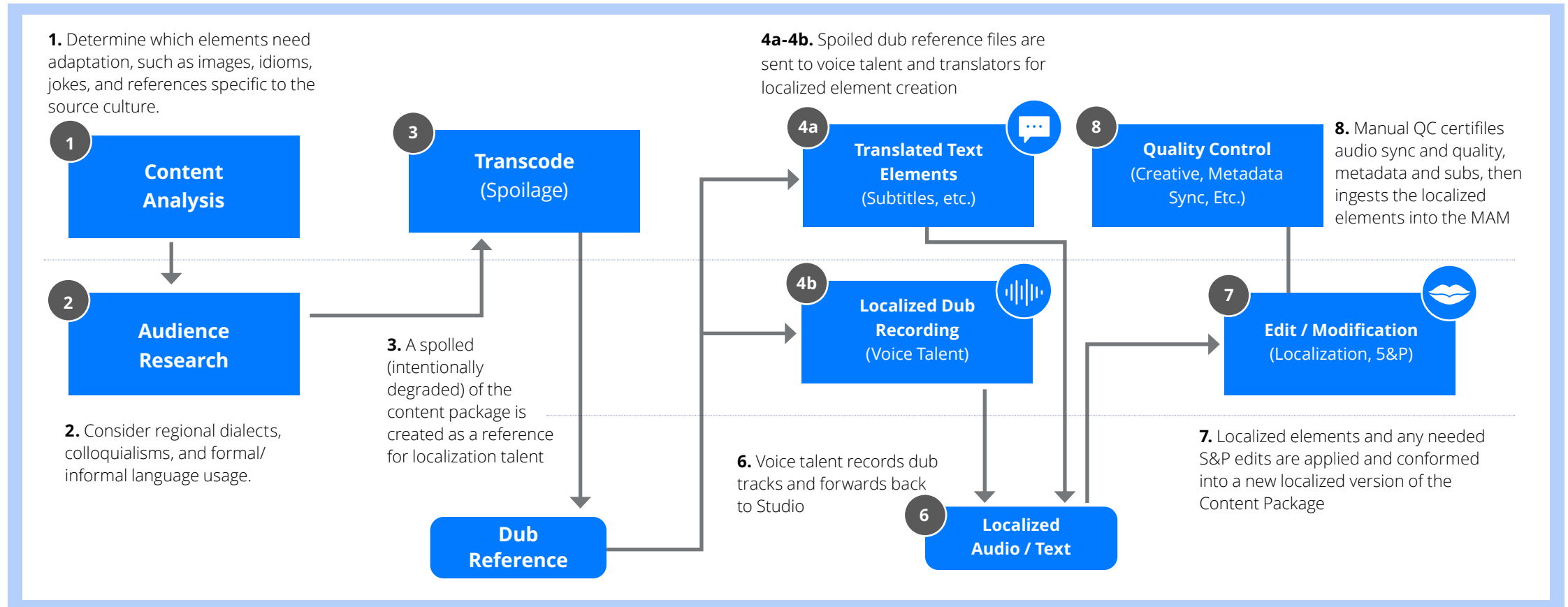
GenAI: Media's Personalized Future

Imagine an advertisement wherein the video automatically translates languages to each geographic region, the background content is adjusted and personalized, and the advertisement costs less on a CPM basis. Sounds too good to be true, right? That is the potential that GenAI brings. In recent years it's proven to be a groundbreaking technology with significant applications across various industries, including media, advertising, and gaming. Past AI technologies have been able to analyze data and tell you what it sees, operating off a set of programmed rules that perform specific tasks. GenAI can demonstrate its ability to take existing data and create something that closely complements human creativity. When it comes to media solutions, GenAI can take the creative process to new heights, producing virtual characters, environments, music, and immersive experience for users.

In the media and entertainment world, GenAI holds the potential to revolutionize talent roles above and below the line. Traditional jobs in creative fields such as screen writers, game developers, costume designers, and visual effect artists may witness a transformation with the integration of GenAI. The technology's generative content ability could impact the way stories are crafted, sets are designed, and visual effects are applied. It may lead to exciting opportunities for creative professionals to collaborate with GenAI and provide the best experience for customers. Furthermore, GenAI can create personalized content tailored to an individual customer's preferences. In the gaming industry, GenAI can generate dynamic worlds, characters, and stories that will enhance the user experience.



Generative AI: Augmenting, Accelerating, and Automating the Creative Localization Process



As we delve deeper into the potential of GenAI, a high-value, near-term use case emerges: autocalization. Autocalization is the advanced application of GenAI to streamline and automate the adaptation of content, including text, audio, and visual elements, to meet the linguistic, cultural, and geographical preferences of diverse global audiences. This innovative process significantly reduces traditional

localization efforts, making it economically feasible to expand content reach and accessibility to previously untapped markets. Deployment of GenAI across localization processes will help break down language, cultural and geographic barriers to enable the introduction of content to global markets previously thinkable due to ROI concerns.

Autolocalization

From watching your favorite streaming series to playing your favorite video game to shopping online, companies use localization to ensure effective global outreach. A global streaming service's dubbing and subtitling team employ several dozen people and have more than doubled in size in the last 4 years. As customers, we often don't think about how content is adapted to our culture, language and, in some cases, even our religion, but content providers do.

Good, localized content and information are more likely to lead to higher customers retention and brand loyalty, as content is personalized. Deploying GenAI on localization processes can help a business overcome common scalability problems, such as the struggle to retain clients or meeting ever-increasing growth targets, while forming an excellent global business reputation through word of mouth to new users.





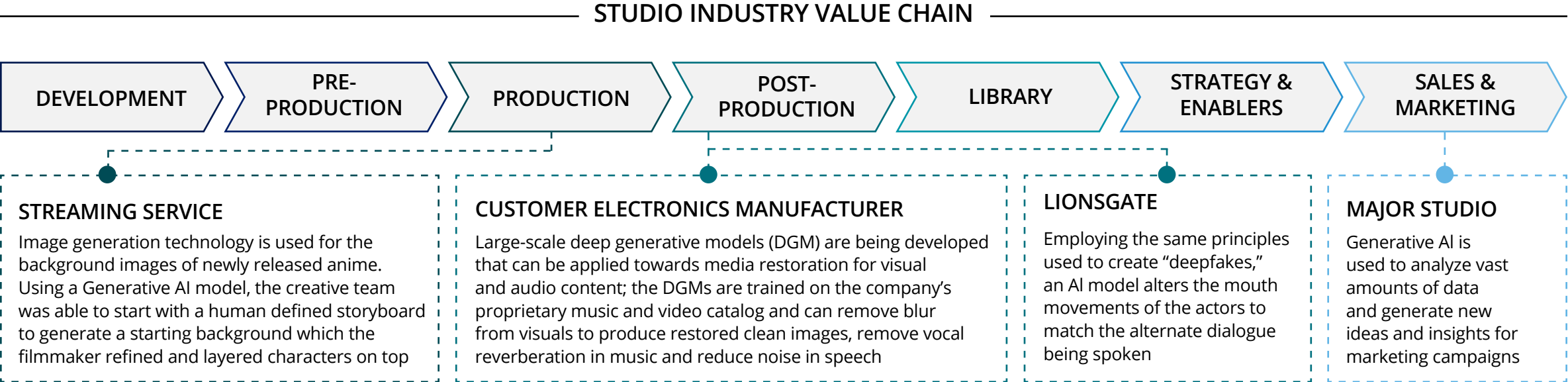
Media Use Case: Autolocalization in Streaming Services

The realm of media, exemplified by streaming platforms, has been revolutionized by autolocalization. Consider the magnitude of content available on such platforms and the diverse global audience served. Localization, which was once a resource-intensive process, now witnesses a transformative shift propelled by GenAI.

Take, for instance, the endeavor of dubbing a non-english series. In its original English form, the dubbing process for such a 12-hour series can take approximately 3.5 months and could require the efforts of more than 50 voice actors. However, with the advent of autolocalization, the process stands to be streamlined significantly. GenAI can autonomously generate subtitles, dubbing scripts, and even voice-over tracks by emulating and re-scripting the voices of actors. This not only reduces the associated time and costs linked with manual localization but also enhances the precision and uniformity of localized content.

Industry Adopters - Studios

Leading players in the Studio industry are increasingly incorporating GenAI into their creative processes to enhance productivity and generate innovative content



INDUSTRY IMPACTS

- ✓ Cost and time savings by automating repetitive tasks
- ✓ Generate new ideas and concepts
- ✓ Produce high-quality, realistic visual effects and animations
- ✓ Reduce the risk of errors and inconsistencies
- ✓ Streamline processes through automation
- ✓ Automate production quality improvement of videos and audio files in post-production

Advertising Use Case:

Precision in Global Marketing Campaigns

The advertising landscape, where campaigns seek to resonate across cultures and demographics, presents another arena ripe for autolocalization. Imagine an advertisement that seamlessly adjusts its language, visuals, and cultural nuances to resonate with audiences in diverse regions. The potential impact is profound - localizing advertising content not only drives customer engagement but also fosters brand loyalty.

By integrating GenAI, advertisements can be dynamically customized to align with regional preferences, thereby enhancing the resonance and effectiveness of the messaging.





Gaming Use Case:

Immersive Worlds through Autocalization

The gaming industry stands as a vibrant playground for GenAI's potential to reshape content localization. Games, often characterized by intricate narratives and immersive worlds, necessitate seamless localization to provide players with authentic and engaging experiences. Autocalization has the capacity to revolutionize the creation of dynamic worlds, characters, and narratives.

By leveraging GenAI, gaming studios can efficiently adapt games to various cultures and languages, transcending geographical barriers. This adaptation extends beyond mere text translation, enabling the recreation of localized dialogues, narratives, and even cultural references. Players across the globe can thus engage with games in a manner that feels personalized, fostering a deeper sense of connection and enhancing the overall gaming experience.

Industry Adopters - Gaming

GenAI is currently being used in the gaming industry to automate and accelerate various aspects of game development, including procedural content generation for environments and characters, automated texture and terrain generation, and dynamic lighting and shading effects

GAMING INDUSTRY VALUE CHAIN



WR
WIN REALITY

WIN Reality uses Runway AI's suite of "AI Magic Tools" to create gaming elements for their baseball and softball VR batting practice products. Runway's toolkit includes content editing and generative ai capabilities (audio to text, visual to visual, text to image / color grade / texture) and allows users to train on their own data set

LEADING ONLINE GAME PLATFORM

Users can create and upload synthetic character voices to the platform via Replica AI's technology which allows users to take a few minutes of speech and creates a Replica Voice which can be given a script to say anything

AI DUNGEON

AI Dungeon is a text-only multiplayer game based on OpenAI's GPT3 that allows players to interact with each other. The game comes with pre-configured adventures and allows players direct the AI to create infinite combinations of worlds, characters and scenarios for tremendous replayability

INDUSTRY IMPACTS

- ✓ Increased efficiency and cost savings
- ✓ Improved player experience and engagement
- ✓ Enhanced player engagement and retention
- ✓ Increased accessibility

Utilization of GenAI in autocalization has permeated media, advertising, and gaming industries, ushering in a new era of efficiency, precision, and global engagement. As these examples illustrate, autocalization goes beyond translation, becoming a potent tool for forging genuine connections with diverse audiences.

However, autocalization is an expensive solution, and some market sizes still may not justify expenditure. For example, some streaming services must secure content deals region by region, and sometimes country by country, while also facing a diverse set of national regulatory restrictions, such as those that limit what content can be made available in local markets. However, the technology could result in eventual revenue generation through tactics like auto-dubbing and voice-to-text generation.





Text Localization

Text localization involves rendering text in the language native to the target audience. This can encompass various elements such as subtitles, credits, titles, audio descriptions, and embedded text. GenAI capabilities in this domain facilitate automatic text transformation tailored to specific geographic regions. For instance, it helps ensure that subtitles adapt to local languages and cultural nuances, enhancing the accessibility and appeal of content across global markets.



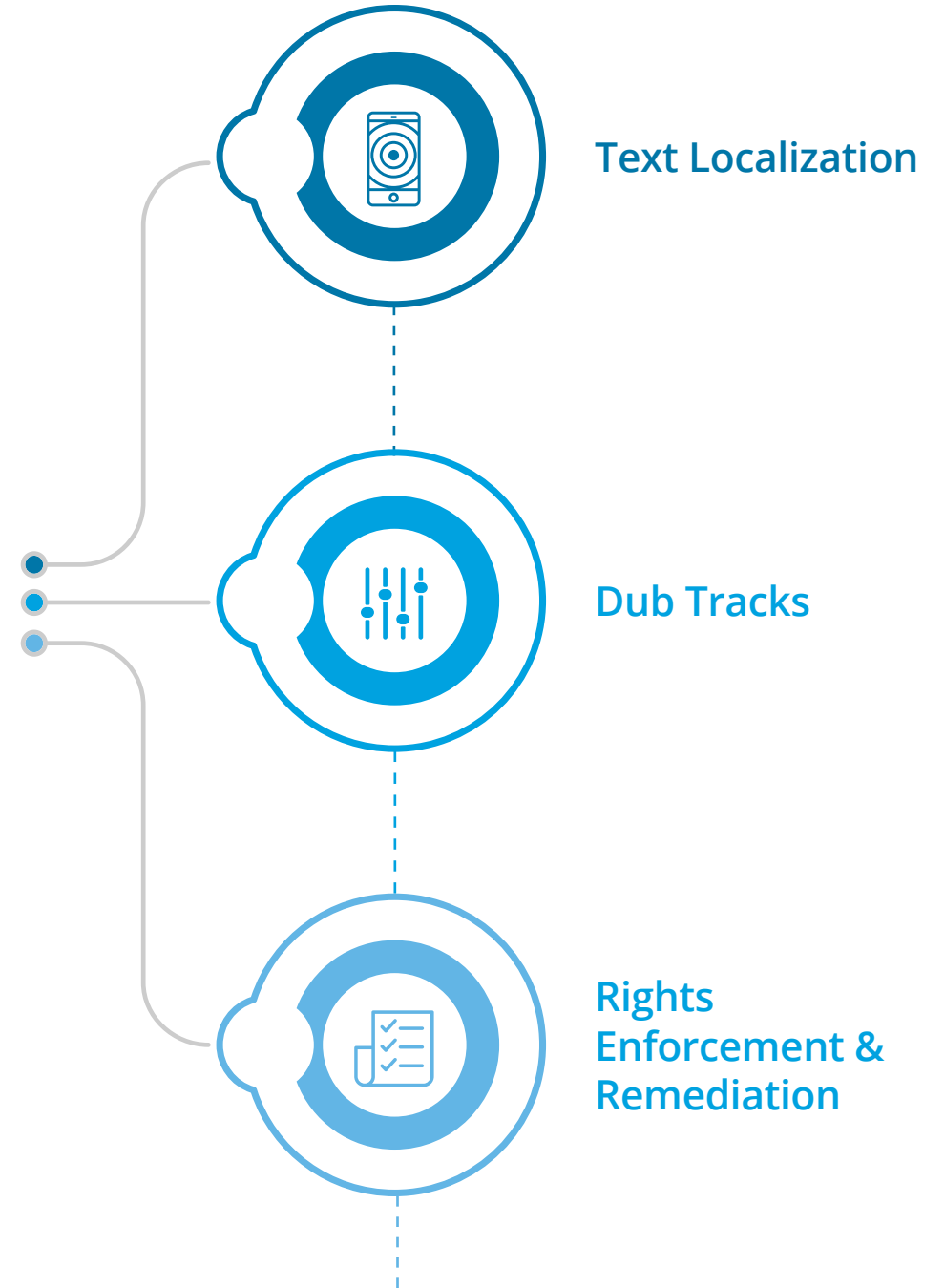
Dub Tracks

In the realm of dubbing, GenAI excels at translating domestic voice dialogues into the destination language. This involves not only changing actors' voices but also synchronizing lip movements with the translated dialogue. The result is a convincing and immersive viewing experience where viewers hear content in their preferred language, with accurately matched lip movements.



Rights Enforcement & Remediation

GenAI can play a pivotal role in enforcing rights related to visual and audio content. For instance, it can flag copyrighted music and other copyrighted materials within content, helping content creators and distributors identify potential issues. GenAI's capabilities in this context include audio fingerprinting and prompt identification of potential rights violations, helping ensure compliance and safeguarding intellectual property.





Objectionable Content

Identifying and handling objectionable content is another area where GenAI can be beneficial. It assists in detecting content that may not be suitable for certain viewing age groups or violates specific standards. This can include identifying nudity, violence, or incorrect product placements. GenAI leverages computer vision to promptly analyze content, coupled with text and image modification capabilities to ensure that content aligns with guidelines.



Quality Control

GenAI's role in quality control can extend to ensuring that content meets high standards. It assists in various aspects, from ensuring accurate translations to fixing human errors in content production. Computer vision capabilities enable thorough visual analysis, while Natural Language Understanding (NLU) techniques enhance text comprehension, collectively contributing to content quality and reliability.



Content & Virtual Creation

GenAI's creative potential extends to the generation of entirely new content. This can encompass the creation of innovative advertisements, 3D objects, or even news articles. By automating content creation based on inputs and data, GenAI opens new possibilities for content producers to stay ahead in the competitive landscape, delivering fresh and engaging content at scale.



“The multifaceted applications of autolocalization, empowered by GenAI, are reshaping how media, advertising, and gaming companies engage with global audiences. From seamless text localization to immersive dubbing, robust rights enforcement, and sophisticated quality control, GenAI is driving efficiency, accessibility, and creativity at every stage of content adaptation.”

	Description	Examples	Generative AI Capability	
Text Localization	Text appears in the language that is local to the targeted area	<ul style="list-style-type: none"> • Subtitles • Credits • Titles 	<ul style="list-style-type: none"> • Audio Description • Embedded text 	<ul style="list-style-type: none"> • Automatic text transformation per geographic region
Dub Tracks	Translate domestic voice dialogue to destination language	<ul style="list-style-type: none"> • Changing actors voices and language • Accurate lip movement per language 		<ul style="list-style-type: none"> • Prompt to audio
Rights Enforcement And Remediation	Enforce rights to visual and audio content	<ul style="list-style-type: none"> • Flag Music and other effects content 		<ul style="list-style-type: none"> • Audio fingerprinting • Prompt to audio
Objectionable Content	Content not appropriate for certain viewing ages or certain standards	<ul style="list-style-type: none"> • Nudity • Violence • Incorrect Product Placement 		<ul style="list-style-type: none"> • Computer vision prompt to text • Image Modification
Quality Control	Ensure product has been vetted	<ul style="list-style-type: none"> • Accurate translations • Fixing human error 		<ul style="list-style-type: none"> • Computer vision prompt to text • NLU to text
Content And Virtual Creation	Creation of new content	<ul style="list-style-type: none"> • New advertisements • 3D object generation • News content 		<ul style="list-style-type: none"> • Automatically create new content based on inputs
Gaming	Content that pertaining to video games	<ul style="list-style-type: none"> • Subtitles • Unique character changes 		<ul style="list-style-type: none"> • Text Transformation • Accurate audio prompt • Accurate visual prompt



Potential Benefits

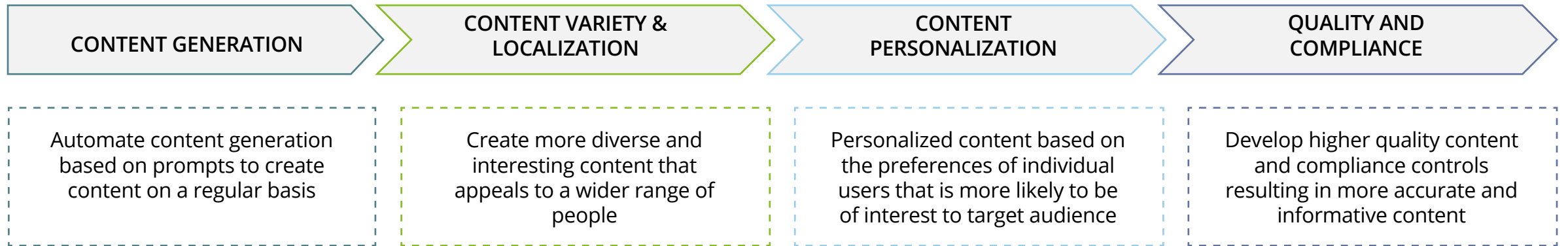
Autolocalization can help reduce costs, opening new markets for content that aren't feasible given traditional localization practices. With the ability to automatically adapt content to specific regions and languages, platforms can gather data on user interactions and tailor their offerings accordingly. This personalized approach not only fosters greater engagement but also eliminates language barriers that may hinder global reach.

As a result, GenAI-driven autolocalization could substantially expand the membership base of media platforms, creating a more inclusive, diverse audience while fostering user loyalty, and driving revenue growth.

Industry Applications - Media Solutions

Generative AI can provide competitive advantage in the Media industry for its capability to automate content production and content management

Media Solutions Generative AI Use Cases



INDUSTRY IMPACTS

- ✓ Reduce costs by saving time for content produced regularly
- ✓ Appeal to a wider range of people to grow revenue and monetization strategy
- ✓ Maximize customer wallet share
- ✓ Improve accuracy and efficiency and reduce human error

GenAI Financial Impact

Understanding the financial implications of autolocalization is essential. The costs associated with traditional localization can vary significantly depending on various factors. These factors encompass the nature of the content (e.g., a short TV episode versus a full-length feature film), the target territory, the complexity of tasks like translation, the duration of rights granted (e.g., a limited license for a TV voice-over versus perpetual rights for a film), production quality, and the talent involved. Talent costs alone exhibit a wide range, with “unknown” local talent often working at relatively modest rates (e.g., a few hundred dollars a day), while A-list talent commands substantially higher fees (e.g., upwards of \$10,000 a day or equivalent in local currency). Additionally, there are costs associated with integrating localized elements and conducting quality control checks on the resulting master, which can vary from a few hundred to several thousand dollars per title.

Comparatively, the adoption of GenAI-driven autolocalization presents a distinct cost-saving opportunity. By automating the localization process, it significantly reduces the time required for content delivery and minimizes the need for extensive quality control checks. As GenAI algorithms continue to enhance their accuracy, the necessity for labor-intensive quality control diminishes, leading to more streamlined production pipelines and reduced operational costs. Moreover, autolocalization reduces distribution rights expenditures, as it empowers platforms to directly adapt content for various markets without relying on intermediaries. This efficiency enables media enterprises to allocate their resources more efficiently, achieve substantial cost savings, and simultaneously maintain high-quality, relevant content.

The adoption of GenAI-driven autolocalization not only has the potential to lower costs significantly but also open doors to new revenue streams by reaching previously underserved markets. These cost reductions, illustrated by the figures provided, are accompanied by a streamlined production process and enhanced user engagement, positioning media enterprises for sustained growth and competitiveness in a rapidly evolving global landscape.





Barriers / Considerations

In the ambitious pursuit of integrating GenAI within the media, advertising, and gaming sectors for enhanced content localization, an array of intricate barriers and considerations come to the forefront. As the technology continues its ascent, it is imperative to delineate and address these challenges, shaping the path towards successful implementation while upholding industry standards and ethical considerations..

Quality Control:

The foundation of GenAI rests upon its training data, rendering the quality of output only as reliable as the data it learns from. As media companies consider POCs and other forays into GenAI, existing content libraries must be accurately cataloged and tagged with metadata to ensure models learn the right behavior. Ensuring the reliability and factuality of the generated output is paramount to maintain the integrity of the content localization process.

Legal & Ethical Issues:

As the canvas of content is transformed by GenAI's strokes, a new canvas of legal and ethical considerations emerges. The intricate web of copyright issues, privacy concerns, and the risk of disseminating misleading or harmful content necessitates vigilant oversight. Ethical quandaries also emerge, where the potential misuse of AI-generated content for malicious purposes could undermine not only individual trust but also industry credibility.

Content Appropriateness:

A crucial checkpoint on this transformative journey is content appropriateness. Although GenAI is poised to expedite content generation, the content itself must align with cultural values and standards. Rigorous review processes must be established to evaluate content for accuracy, tone, and cultural sensitivities before dissemination. A per-region approach may not be sufficient here; detailed rulesets down to the country will need be maintained within the model to ensure content is fit-for-audience.





Technical Barriers:

The temporal nature of media content introduces its own set of technical challenges. GenAI's capacity to adhere to stringent frame rates and shutter intervals, often within mere seconds, demands meticulous synchronization and integration. Addressing these technical intricacies is essential to ensure the inclusion of AI-generated content.

Industry Culture:

The integration of GenAI into industries with established manual processes necessitates a significant shift in industry culture. Acknowledging the hesitancy to relinquish time-honored practices, embracing this technological leap requires time, strategic planning, and early adopter pioneers to pave the way.

Skills Mismatch:

As GenAI emerges as a nascent technology, a shortage of experts and proficient engineers becomes evident. Recruiting individuals with the requisite expertise to harness this technology effectively presents a challenge. The demand for a specialized skillset could potentially outpace the availability of qualified talent.

Additional Considerations:

Beyond these fundamental barriers, a range of additional considerations underscore the complexity of implementing GenAI. A distilled overview of the intended objective must be well-defined, preventing the algorithm from veering astray. The computational demands of generating new content, often necessitating substantial GPU power, stand as a practical constraint. The phenomenon of algorithmic hallucination underscores the need for GenAI to accurately express its limitations. The potential staleness of content generated based on past data highlights the need for up-to-date and diverse training data. Furthermore, the technology's limitation in accessing fundamental information and its tendency to operate as a black box system warrant careful scrutiny. Token constraints and the ability to retain context from past inputs are also integral aspects to consider. Lastly, the quality and availability of training data must be vigilantly managed to ensure the efficacy of the AI's outputs.

Intricately weaving through these barriers and considerations, the successful implementation of GenAI within the realms of media, advertising, and gaming requires a comprehensive approach that addresses each facet of the journey. By embracing these challenges, industries can forge a path that harnesses the potential of GenAI while safeguarding content integrity, ethical standards, and industry credibility.



Conclusion

In the rapidly evolving landscape of media, advertising, and gaming industries, the convergence of GenAI and content localization through autolocalization has transformative potential. This paper has ventured into the depths of this technological synergy, exploring its applications, benefits, challenges, and additional considerations.

However, as we journey into this transformative realm, we must navigate a spectrum of challenges. Quality control, ethical dilemmas, and content appropriateness stand as formidable considerations. Addressing these requires vigilance and the establishment of rigorous review processes to ensure content aligns with and the appropriate standards.

Furthermore, the successful integration of GenAI into these industries likely necessitates a shift in industry culture and the acquisition of specialized skills. In a world where global reach and engagement are paramount, autolocalization through GenAI offers a means to foster authentic connections, enhance customer experiences, and expand opportunities for businesses to thrive in an increasingly interconnected and diverse landscape. The road ahead may be intricate, but the promise of reshaping industries and forging new avenues for growth and innovation through autolocalization is undeniably exciting and filled with possibilities.



Reach out for a conversation



Jason Williamson
Managing Director
Deloitte Consulting LLP
Email: jaswilliamson@deloitte.com



Jon Myklebust
Managing Director
Deloitte Consulting LLP
Email: jmyklebust@deloitte.com



Baris Sarer
Principal
Deloitte Consulting LLP
Email: bsarer@deloitte.com

Deloitte.

About Deloitte

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee, and its network of member firms, each of which is a legally separate and independent entity. Please see www.deloitte.com/about for a detailed description of the legal structure of Deloitte Touche Tohmatsu Limited and its member firms. Please see www.deloitte.com/us/about for a detailed description of the legal structure of Deloitte LLP and its subsidiaries. Certain services may not be available to attest clients under the rules and regulations of public accounting.

This publication contains general information only and Deloitte is not, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional advisor. Deloitte shall not be responsible for any loss sustained by any person who relies on this publication.