

## Data Storytelling: Analytics Beyond Data Visualizations and Slideshows

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By Analyst(s): David Pidsley, James Richardson

Initiatives: [Analytics, BI and Data Science Solutions](#); [Artificial Intelligence](#); [Data and Analytics Programs and Practices](#)

The addition of audiovisual capabilities to automated data stories will increase the reach, transmission speed and comprehension of data. Data and analytics leaders must adopt these capabilities to gain the attention of decision makers and to improve how their organizations make data-driven decisions.

### Overview

#### Impacts

- Automation is increasing the adoption of data storytelling for data-driven decision making.
- Audiovisual features in data stories are critical to gaining the attention of decision makers.
- Audiovisual automated data stories are changing analytics usage patterns.

#### Recommendations

Data and analytics (D&A) leaders responsible for analytics, business intelligence (BI) and data science solutions must:

- Use the automated data story workflow to determine the current and target states, informed by the evolution of analytics eras.
- Improve data storytelling capabilities by determining the maturity level of audio and visual features to adopt.

- Mobilize analytics consumers to compose, recompose and widely share short-form, multiexperience and decision-centric data stories. Recomposable data stories unleash business value by reusing modular data story elements so that business users can drive action.

## Strategic Planning Assumptions

By 2023, overall analytics adoption will increase from 35% to 50%, driven by vertical- and domain-specific augmented analytics solutions.

By 2025, data stories will be the most widespread way of consuming analytics, and 75% of stories will be automatically generated using augmented analytics techniques.

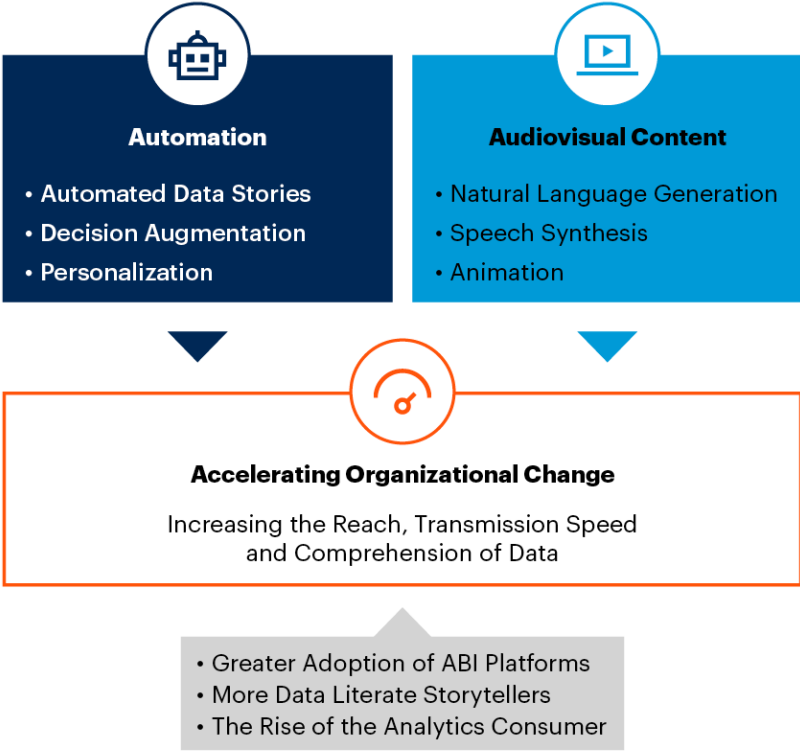
By 2025, augmented consumerization functionality will drive adoption of analytics and business intelligence (ABI) capabilities beyond 50% for the first time, influencing more business processes and decisions.

## Introduction

D&A leaders increasingly use data storytelling to deliver insights to decision makers. Data stories are not scalable because they are manual, and the experience is like viewing a slideshow. To address this gap, augmented analytics is now enabling automated data stories. But, presenting users with audio and visual content is becoming critical to gaining the attention of decision makers. *How can D&A leaders ensure that automated data stories are compelling and increase adoption of data-driven decision making?* D&A leaders should look for the audiovisual automated data storytelling capabilities of ABI and data science and machine learning (DSML) platforms, embedded analytics platforms, and vertical- and domain-specific augmented analytics tools.

Figure 1: Impacts and Top Recommendations for Audiovisual Automated Data Storytelling

**Impacts and Top Recommendations for Audiovisual Automated Data Storytelling**



Source: Gartner  
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**Table 1: Impacts and Top Recommendations for D&A Leaders**

Impacts	Top Recommendations
Automation is increasing the adoption of data storytelling for data-driven decision making.	Use the automated data story workflow to determine the current and target states, informed by the evolution of analytics eras.
Audiovisual features in data stories are critical to gaining the attention of decision makers.	Improve data storytelling capabilities by determining the maturity level of audio and visual features to adopt.
Audiovisual automated data stories are changing analytics usage patterns.	Mobilize analytics consumers to compose, recompose and widely share short-form, multiexperience and decision-centric data stories. Recomposable data stories unleash business value by reusing modular data story elements so that business users can drive action.

Source: Gartner

## Impacts and Recommendations

### Automation Is Increasing the Adoption of Data Storytelling for Data-Driven Decision Making

Reporting, natural language generation (NLG) and data storytelling are established means to share the findings of analysis. D&A teams have always created dashboards and visualizations, but many are unfamiliar with weaving those artifacts into a narrative. Data stories explore and data storytellers have manually chosen fitting visualizations based on the kind of data they want to present and the audience to which they want to present it. Arranged into a time or conceptual sequence, these visualizations are shaped into a narrative to help reveal findings, trends or underlying patterns. Five popular types of data storytelling are infographics, connected slides, collaborative story capture, social user interface and automated data stories. Henceforth, we will focus on the last type.

Algorithmic content, sometimes called “robotic content,” has been used for years in the generation of natural language content for news, sports reports and digests of voluminous material. New creative AI techniques are accelerating the content production life cycle — operationalizing and scaling content production from ideation to creation and editing. In the past few years, improvements in machine learning techniques, such as deep learning and neural networks, have enabled AI to generate text, imagery, and video and audio content.

In an example of AI supporting video efforts, IBM and the United States Tennis Association partnered to bring AI to the U.S. Open. In 2018, AI tracked every shot of a match and the crowd’s excitement-level associated with each shot. AI, in near real time, then recommended the most exciting shot of the match for use across digital channels, including social. An AI highlight builder generated a list of proposed points to be included in a video highlight package to showcase the best moments from the day. Once the team selected the shots, the AI system was able to generate the video (see [Embrace These 3 Key Trends in Content Marketing](#)).

**Automated data storytelling is an augmented analytics capability that generates news-style data stories — combining headlines, narrative text, data visualizations and audiovisual content based on the ongoing monitoring of findings.**

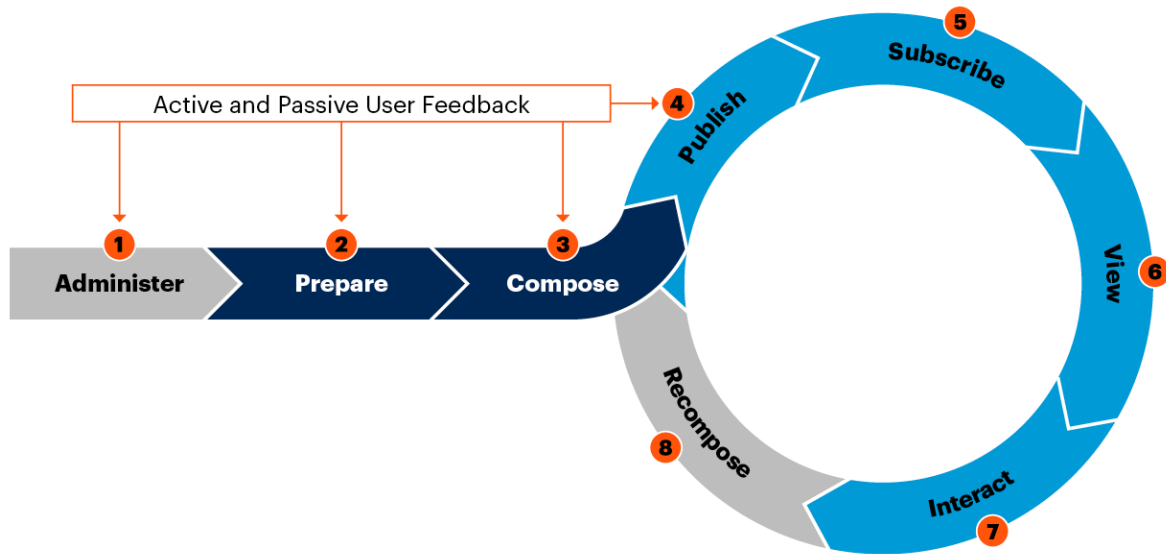
Automation will increase the adoption of data storytelling for data-driven decision making (see [Augmented Analytics: Teaching Machines to Tell Data Stories to Humans](#)). Using automated data stories is not without risks, however. The first is the ongoing question around what ultimately makes data compelling or relevant, which is unlikely to be solved using algorithms. Additionally, because AI will disrupt well-established processes for enterprise reporting and self-service analytics, D&A leaders must consider their company culture. To avoid disruption to the analytics content development processes, while simultaneously applying the benefits of creative AI, D&A leaders can employ a two-pronged approach for automated data stories. This approach applies automation to story creation but keeps humans in the loop during the publishing step.

Figure 2 illustrates which steps should be automated and which augmented.

Figure 2: Automated Data Story Workflow

### Automated Data Story Workflow

■ Manual   ■ Augmented   ■ Automated



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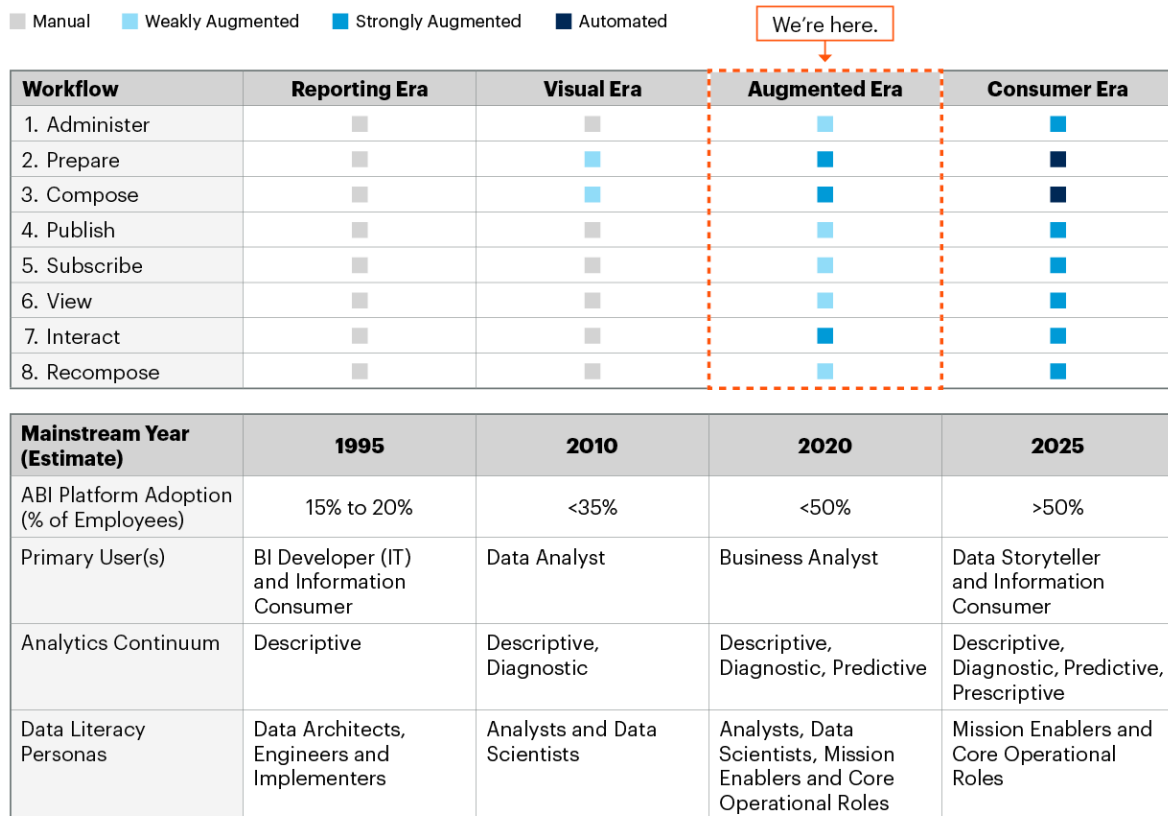
The workflow for automated data stories in an analytics platform or tool involves:

1. Administering and configuring to enable automated data stories
2. Preparing the analytics components that are composed into data stories (proactive)
3. Composing the data story in an active way
4. Publishing and/or permitting publication of the data story
5. Subscribing to (or personalizing) data stories (elective)
6. Viewing a data story (passive)
7. Interacting with the data story (interactive)
8. Recomposing the data story or its components (reactive), which has a feedback loop to the publishing step

Augmentation is increasing across all stages of this workflow, but to different extents over the four analytics eras (reporting, visual, augmented and consumer). As shown in Figure 3, the reporting era had no data storytelling. The visual era had no automated data storytelling, with the prepare and compose stages being weakly augmented. The augmented era has augmentation across the data storytelling workflow, with the prepare, compose and interact stages being strongly augmented through assisted content creation and consumption. The consumer era is likely to be strongly augmented, with the prepare and compose stages being automated through generative content creation. D&A leaders should use Figure 3 to determine their target level of automation in the data story workflow.

**Figure 3: Evolution of Automated Data Stories**

### Evolution of Automated Data Stories



Source: Gartner  
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The role of D&A is changing from a stand-alone discipline to a catalyst for digital strategy and transformation. Ensure that automated data storytelling is linked to the D&A mission – primarily to customer (or citizen) value and secondarily to internal stakeholder value. Ensure that wider publishing and composition of analytics content aligns with [The Foundation of a Modern Data and Analytics Strategy](#), and is more broadly integrated into desired ways of working and methods of orchestrating enterprise action. Lastly, determine the maturity of your organization's data and analytics function, as described in [Use IT Score to Benchmark Your Data and Analytics Program](#). That exercise will help you assess your organization's readiness for automated data stories, especially in terms of the data literacy of business analysts and information consumers. (See also [Tool: Data Literacy Personas](#).)

*Recommendation:*

- Use the automated data story workflow to determine the current and target states, informed by the evolution of analytics eras.

## Audiovisual Features in Data Stories Are Critical to Gaining the Attention of Decision Makers

Audiovisual content consumption, especially audio and video consumption, has undergone significant growth in popularity, as evidenced by Table 2 and the following Gartner research:

- [Podcasts: A Medium Marketers Can No Longer Ignore](#)
- [A Best Practice Guide for Tech CEOs in Developing Podcasts](#)
- [Add Video to Your Personalization Strategy](#)
- [Create Video Content That Connects With Customers](#)
- [Research Guide: Trends in Video on Demand and Over-the-Top Advertising](#)



**Table 2: Audiovisual Content Consumption**

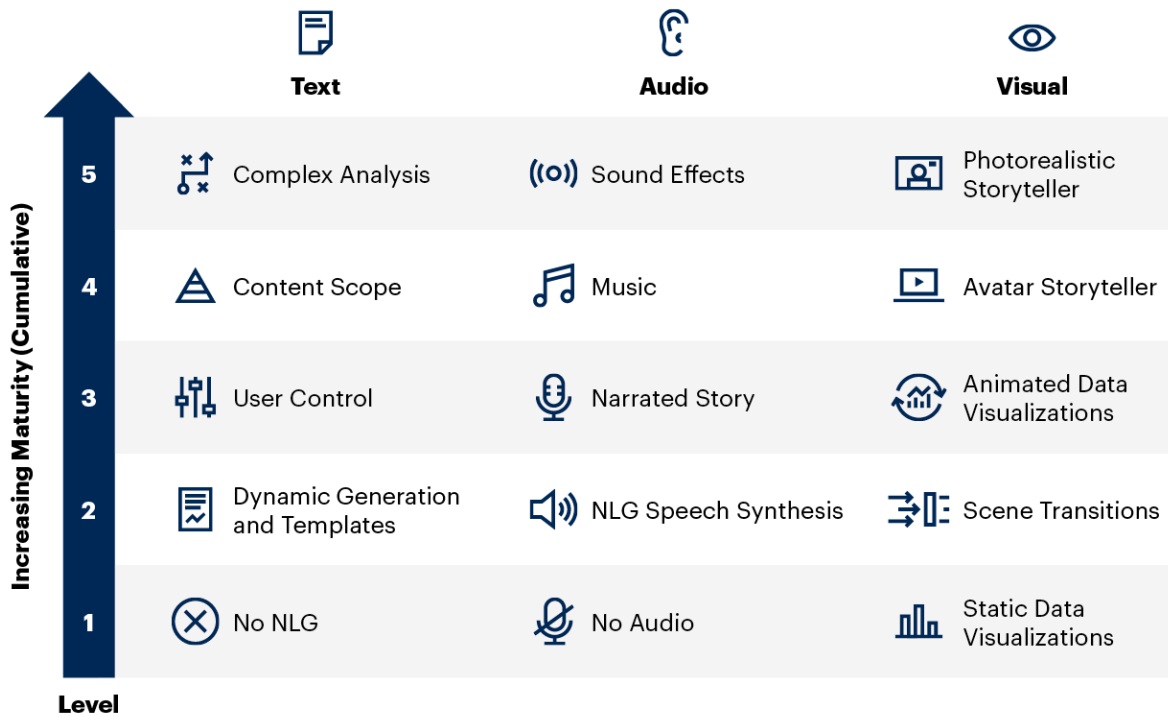
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<ul style="list-style-type: none"> <li>■ Weekly online audio listening is estimated at 176 million, or <b>62%</b>, of the U.S. population (ages 12 and older).</li> <li>■ From 2006 to 2020, the number of U.S. podcast listeners grew by <b>55%</b>.</li> <li>■ Podcasts enable <b>significantly higher</b> knowledge gain and satisfaction than books.</li> <li>■ As of mid-2019, there were more than <b>600,000</b> active podcasts streaming online.</li> <li>■ <b>43%</b> people in the U.S. listen to spoken word audio each day, and 75% listen monthly.</li> </ul>	<ul style="list-style-type: none"> <li>■ On average, each person watches <b>100 minutes</b> of online video per day. The number of minutes of video consumed has grown 19% since 2019.</li> <li>■ <b>81%</b> of U.S. adults are YouTube users.</li> <li>■ <b>70%</b> of what people watch on YouTube is determined by its recommendation algorithm.</li> <li>■ <b>71%</b> of the digital video minutes viewed in the U.S. are on a mobile device.</li> <li>■ <b>59%</b> of executives prefer watching a video to reading text on a topic.</li> </ul>

Source: Multiple Sources (see links in-line)

Despite huge growth in audiovisual consumption, most automated data stories are primitive-looking slideshows consisting of data visualizations with narrative text underneath. By contrast, the audio and visual features of automated data stories will boost adoption by increasing the reach, transmission speed and comprehension of data for the emerging audience of analytics consumers. These audiovisual automated data stories are made of audio, video and other types of analytics outputs (user interfaces), such as natural language explanations and animated data visualizations. Through composable analytics capabilities, audiovisual content can be curated into streaming alerts and insight feeds (news feeds). D&A leaders must understand that “the medium is the message,” and be able to distinguish between text, audio and visual maturity levels of automated data stories, as shown in Figure 4.

Figure 4: Maturity Levels in Audiovisual Automated Data Stories

**Maturity Levels in Audiovisual Automated Data Stories**



Source: Gartner  
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The natural language generated within automated data stories includes various forms of complex analysis of the underlying data and analytics. In scope, the NLG content can relate to a chart, report, dashboard, data story or dataset. Users can control the templates or the dynamic generation of natural language outputs for the data story. Audio content for automated data stories consists of natural language explanations and synthesized speech – narrated as a story in the preferred tone and language – along with music and sound effects. Visual content for automated data stories consists of animation and a presenter, delivered in a video format (see Note 1: Detailed Maturity Levels in Audiovisual Automated Data Storytelling).

Sharing analytics content in new audiovisual formats hugely increases the potential audience of consumers, presenting new security risks and a need for governance to keep up. Data stories are meant to be shared, but confidential insights are not. In addition to content that can be displayed and consumed natively within ABI, DSML and other platforms and shared within their existing security model, platforms may also allow exporting to open file formats. Examples of these include MP3, AAC, WAV and FLAC for audio, and MP4, MOV, AVI, WMV and H.264 for video. Audiovisual analytics content in these formats can be shared online in a similar way to screenshots and infographics today.

**Personalization** is gaining momentum with early adopters. Manually authoring audiovisual data stories is time-consuming for highly skilled people, and the investment in creating such analytics content is unlikely to be reusable. D&A leaders are seeking tools to improve decision-making outcomes, speed, scale and participation. Tools must be aware of users' contexts — who they are, where they are, what they are asking and when they are engaging. Such features are crucial in presenting users with only what is important to decide and act on at a particular moment. Dynamic, autogenerated and personalized data stories will offer multiple experiences that leverage a variety of devices and consumption methods. If embedded in existing business applications, personalized data stories can be pushed directly into the consumer's natural workflow. By utilizing creative AI, machines can render and create these at a fraction of the time and at a higher level of customization. The contextualization and relevance of insights becomes the battleground for augmented analytics capabilities as tool customization, personalization and learning from user data are what will make the consumer experience more "sticky."

While creative AI is experiencing rapid development, claims around AI capabilities can be unclear or exaggerated, causing D&A leaders to expect more than AI can deliver. Data stories and the decision augmentation they enable improve by incorporating machine learning. Automated systems should optimize audiovisual and other content toward more personalized stories based on explicit goals, user profiles, telemetry, usage, content sharing and feedback (see [Add Personalized Video to Your Content Marketing Mix](#)). Audiovisual content should be optimized for its function, outcome or metric — whether that is to make the right decisions faster, maximize comprehension, influence particular decision makers, create sustainable behavioral changes, or support the emotional well-being of the audience. (For more information, see Customer Psychographics and Emotion AI on the [Hype Cycle for Customer Experience Analytics, 2020](#).)

*Recommendation:*

- Improve data storytelling capabilities by determining the maturity level of audio and visual features to adopt.

## Audiovisual Automated Data Stories Are Changing Analytics Usage Patterns

Augmented analytics capabilities, such as automated insights, NLG, natural language query (NLQ) and data storytelling, make the analytics consumer of tomorrow a power user by today's standards. In the polls for the 2021 Gartner Analytics & Business Intelligence Platforms Magic Quadrant Insights Webinars, respondents cited automated insights (44%) and data storytelling (25%) as the most important emerging capabilities required for selection of a new ABI platform. <sup>1</sup> Driven by democratization and decision augmentation, these capabilities increase user autonomy, community collaboration and business resilience. Analytics consumerization will bring a corresponding decline in manual preparation of analytics components. Templates and generative AI techniques will enable self-composition of data stories by systems, rather than people (see [Top Trends in Data and Analytics for 2021: The Rise of the Augmented Consumer](#)).

D&A leaders must widen the focus of their analytics initiatives from enabling data and business analysts to enabling information consumers and data storytellers (see Figure 3). Decision augmentation puts advanced analytical power in the hands of the analytics consumer – it gives consumers tools for influence previously available to only data analysts and data scientists. This shift is pivotal in getting the right people to use data to create better outcomes from decisions that are more complex than ever before (see [7 Levels of Hybrid Human and AI Decision Making](#)).

Automation of audio and visual data stories can have a profound effect on organizational culture. The expense of experts or teams with data storytelling, graphical and audiovisual content production skills – and the scarcity of time to compose data stories for a particular decision – will no longer hinder data storytelling in organizations. However, there will be a change in the degree of interaction, as audiovisual features and automated data stories result in a general decline in data dexterity. Organizations will have more augmented analytics consumers able to operate within accelerated decision windows (time frames), but fewer expert analytics authors.

The majority of analytics consumers will enter the data story workflow (shown in Figure 2) when viewing content that has already been created from prepared components and existing data visualizations, composed, and published to a channel they subscribe to. Their interaction will be followed by NLQ or conversational analytics. Workflows starting with a user search or NLQ that requires answers on the fly have to generate audiovisual content formats that take only a few seconds to compile and stream to the user interface.

Once triggered, data stories will be shared through social interfaces within ABI platforms, within the enterprise or in public social networks. Sharing will be within and between analytics communities that are centered on decisions and led by outcomes. D&A sponsors' and ambassadors' usage patterns will be focused on publishing and/or approving publication of the data story. Decision makers in lines of business will be subscribing to and personalizing which data stories they receive, so that only the most relevant ones show up in their feeds.

Attention spans are shorter than ever, and there is only a certain amount of information that can be taken into account for a decision and a limited window for compiling that information. Human-made dashboards and reports are helpful, but alone, they do not enable data-driven decisions at the speed and scale needed. Therefore, D&A leaders must take advantage of automated data story creation capabilities and audiovisual consumption experiences to deliver 60-second-long, contextualized insights to more decision makers.

Multiexperience analytics enable various devices (desktop, mobile, wearables, head-mounted displays, immersive environments), modes of interaction (keyboard, mouse, voice, conversational, touch, gesture) and application interfaces that analytics consumers can exploit on their decision-making journey. So far, data stories have been focused on desktop devices. However, audiovisual content enables a mobile-first and cross-device experience, and automated data stories present this information at the time of need, when decisions are being made. (For more information, see [Data Storytelling With Multiexperiences](#) [webinar] and [Multiexperience Will Be the New Normal for Consuming Analytics Content in the Augmented Era.](#))

Design thinking stipulates that centering content on the target audience of the data story and on the decision those viewers are trying to inform is essential to generating action that creates business value. Consumers need to interact and critically engage with data stories, rather than passively view the narrative and data visualizations that they are presented with. Consider, for example, how automated data stories are a supplement for existing executive dashboards. Consumers will compare them with existing dashboards and reports that they may or may not trust. The role of consumers will shift toward recomposing the data story or its components (being reactive). They should explore and question the narrative and its components, before permitting the data story to be recomposed and shared with others. The composability of ABI and DSML platforms can put this approach into practice. Recomposable stories unleash business value by reusing modular data story elements so that business users can drive action. Composability should enable business users to move from “Which tools should I use?” to “What capabilities can I compose?”

Organizations that have adopted a composable approach to data stories are likely to outpace competition by the speed of new feature implementation. Audiovisual automated data stories will enable faster data-driven decisions. Organizations that harness the collective intelligence of analytics consumers and communities will outperform competitors that rely solely on centralized analytics experts or self-service BI. (For more information, see [Use Cloud to Compose Analytics, BI and Data Science Capabilities for Reusability and Resilience](#).)

#### *Recommendation:*

- Mobilize analytics consumers to compose, recompose and widely share short-form, multiexperience and decision-centric data stories. Recomposable data stories unleash business value by reusing modular data story elements so that business users can drive action.

## Evidence

The conclusions in this document are based on the following:

- Gartner client inquiries from December 2020 through June 2021.
- Research conducted for the 2021 iterations of the [Magic Quadrant for Analytics and Business Intelligence Platforms](#) and the [Magic Quadrant for Data Science and Machine Learning Platforms](#).

- [Market Guide for Augmented Analytics Tools.](#)
- The following Hype Cycles:
  - [Hype Cycle for Analytics and Business Intelligence, 2020](#)
  - [Hype Cycle for Data Science and Machine Learning, 2020](#)
  - [Hype Cycles for Artificial Intelligence, 2020](#)
  - [Hype Cycle for the Future of Applications, 2020](#)
  - [Hype Cycle for Customer Experience Analytics, 2020](#)

<sup>1</sup> We polled participants of the following webinars:

- 2021 Gartner Analytics & Business Intelligence Platforms Magic Quadrant Insights Webinar, held on 28 April 2021 among participants in the Americas region
- 2021 Gartner Analytics & BI Platforms Magic Quadrant Insights (AEST) Webinar, held on 28 June 2021 among participants in the APAC region

We asked both sets of participants, “What is the most important emerging capability you’ll require when selecting a new analytics and BI platform?” Among the 233 respondents (n = 168, Americas; n = 65, APAC), 44% cited automated insights and 25% data storytelling. The remaining percentage was split among three categories: NLQ, catalogs and NLG.

## Note 1: Detailed Maturity Levels In Audiovisual Automated Data Storytelling

Text content for automated data stories consists of complex analysis of the analytics content in scope, where users control the dynamic generation or templates for outputs of natural language:

1. Some automated data stories have no NLG.
2. Dynamic generation and templates are used.
3. Users control the verbosity and tone of the generated text.
4. Analytics content in scope includes charts, dashboards or data models.

5. Complex analysis in natural language includes the ability to rank, compare, trend, forecast and predict.

**Audio** content for automated data stories consists of natural language explanations and synthesized speech in the user's preferred language, along with music and sound effects:

1. Some automated data stories have no audio.
2. NLG is performed on scenes, and those explanations are composed into a script for the entire data story. NLG uses a composite of rule-based algorithms and machine learning. Speech synthesis is applied to the NLG.
3. A narrator verbalizes a data story script about the visual analytics content being displayed (unless audio only). Multilingual speech and choice of tone and language style are supported.
4. Selected or generated music provides the context for the audiovisual content through atmospheric tone.
5. Sound effects and changes to the volume, pitch and tempo draw attention to analytics content and scene changes.

**Visual** content for automated data stories consists of animation and an avatar or photorealistic storyteller, which may be exported in a video format:

1. Some automated data stories have only static data visualizations.
2. Data stories have scene transitions.
3. Data stories have animated data visualizations.
4. One or more storytellers are represented by avatars with increasing sophistication, ranging from static pictures to animated caricatures, that appear for part or all of the story.
5. Photorealistic, deepfake news readers emerge as the product of deep learning and image synthesis techniques. They typically materialize as a video and audio storyteller mimicking the speech and appearance of a human being.



## Recommended by the Authors

Some documents may not be available as part of your current Gartner subscription.

[Market Guide for Augmented Analytics Tools](#)

[Cool Vendors in Analytics and Data Science](#)

[Augmented Analytics: Teaching Machines to Tell Data Stories to Humans](#)

[Maximize the Benefits of Augmented Analytics With a Strategic Action Plan](#)

[Augmented Analytics Is the Future of Analytics](#)

[How to Benefit From Creative AI – Assisted and Generative Content Creation](#)

[Innovation Insight for Generative AI](#)

[Data Storytelling Is Critical to Getting the COVID-19 Message Across](#)

[Predicts 2021: Analytics, BI and Data Science Solutions – Pervasive, Democratized and Composable](#)

[How CDOs Can Use Data Storytelling to Engage and Influence Stakeholders](#)

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