NTT DATA
Trusted Global Innovator

Enabling Video Smart Operations

Evolving operations in a digital-first world
– A Media & Broadcasting success history

WHITE PAPER / CONSULTING

Index

Introduction

"There is no alternative to digital transformation. Visionary companies will carve out new strategic options for themselves — those that don't adapt, will fail."

Jeff Bezos, Amazon

In recent decades, the majority of business leaders are becoming more and more aware that Operations comprehend the set of processes, systems and services essential to the business and that their automation, through a machine-first and zero touch approach, is essential to improve organizational efficiency, increase customer satisfaction, reduce operating costs and therefore remain competitive.

This is particularly true for the Media Industry where key broadcasting players are challenged by the OTT fast expansion and they fight their market share through classic competitive strategies (on graphics, the preview offer, preview offer, User Experience, features, price, etc ...). So to remain competitive, traditional broadcasters have started to introduce a transformation path by updating their systems and so their architecture streamlining their video content supply chain processes and innovating/automating their operations activities.

In fact the majority of content operations is characterized by high manual intensive processes, which are difficult and activities with low level of automation.

For example, there may be a need to dub the content. This activity takes a long time as the voice actors have to repeatedly rehearse the lines in such a way as to put them in sync with the images and with the lip movement of the actors. Moreover, for these activities it is required to engage and manage external agencies

Also, there is a need to ensure the airing of all live events. Usually this activity is carried out daily by operators who compare all schedules and constantly add / update the palimpsest based on the changes that are made. It is therefore an activity that requires a lot of effort from the operators but with low added value.Another costly process in terms of effort spent by operators is Video Quality Control (VQC), which is essential to ensure that the video complies with current regulations and technical and editorial standards. This process consists of a series of manual checks carried out while viewing the content in order to identify any anomalies, such as the presence of incorrect subtitles, the absence of color / brightness of the correct pixels in the video or the presence of noise in the audio.

In addition, another process is the one related to the control of the content transmitted on the different platforms. The operators manually carry out various control activities in order to constantly monitor the platforms, including: checking the correctness of the metadata (E.g. names of actors, synopsis); image control (E.g. duplicated, wrong / missing images); verification of audio presence, detection of audio tracks and alternative languages, detection of visual errors, presence of black frames and silence in videos; detection of the presence of pay per view and PIN control.

In general, considering the entire Content Supply Chain flow, there are many manual activities that require checks and/or updates of the information making comparisons between files and systems; or file completion by retrieving information from different databases / systems as there is no central data management system which is constantly updated. As a result, it is also not possible to use the data to monitor the status of operations or to guide operational decisions real time.

Hyperautomation to the rescue

As media, content and service providers evolve, they need to transform and provide next generation video services produced along the Content Supply Chain.

To achieve this goal, they need to rapidly apply evolving technologies like Hyperautomation that has the capabilities to handle media specific operations like content processing, editing, repurposing, metadata transformation, content management and content delivery, simplifying and enhancing the media operations and enabling a more integrated offering.

As stated by Gartner (Top strategies technology trends 2022): "Hyperautomation is a business-driven, disciplined approach that organizations use to rapidly identify, vet and automate as many business and IT processes as possible. Hyperautomation involves
the orchestrated use of multiple technologies, tools or platforms, including:

- **Artificial intelligence** (AI) & **Machine Learning** (ML)
- **Robotic Process Automation** (RPA)
- **Intelligent Business Process Management Suites (iBPMS)**
- **Integration Platform as a Service (iPaaS)**
- **Low-code/no-code tools**
- **Other types of decision, process and task automation tools**

The set of these technologies makes it possible to automate complex and non-integrated processes with unstructured data and a high level of ambiguity.

Companies are facing many barriers in introducing this new paradigm (organizational, technological and security), but the biggest one is undoubtedly the architecture lack of flexibility. In fact, in our experience, many companies find it difficult to introduce process automation and orchestration technologies within their own architectures and to obtain scalability and speed of execution benefits. Therefore, it becomes necessary for companies to understand if they have all the necessary capabilities to introduce the video smart operation (VSM).

To help its clients, leveraging on the request of a key broadcasting player, NTT DATA has developed a framework capable of detecting the level of maturity within an organization's Operations and suggesting which new technologies they should introduce in a gradual and scalable manner.

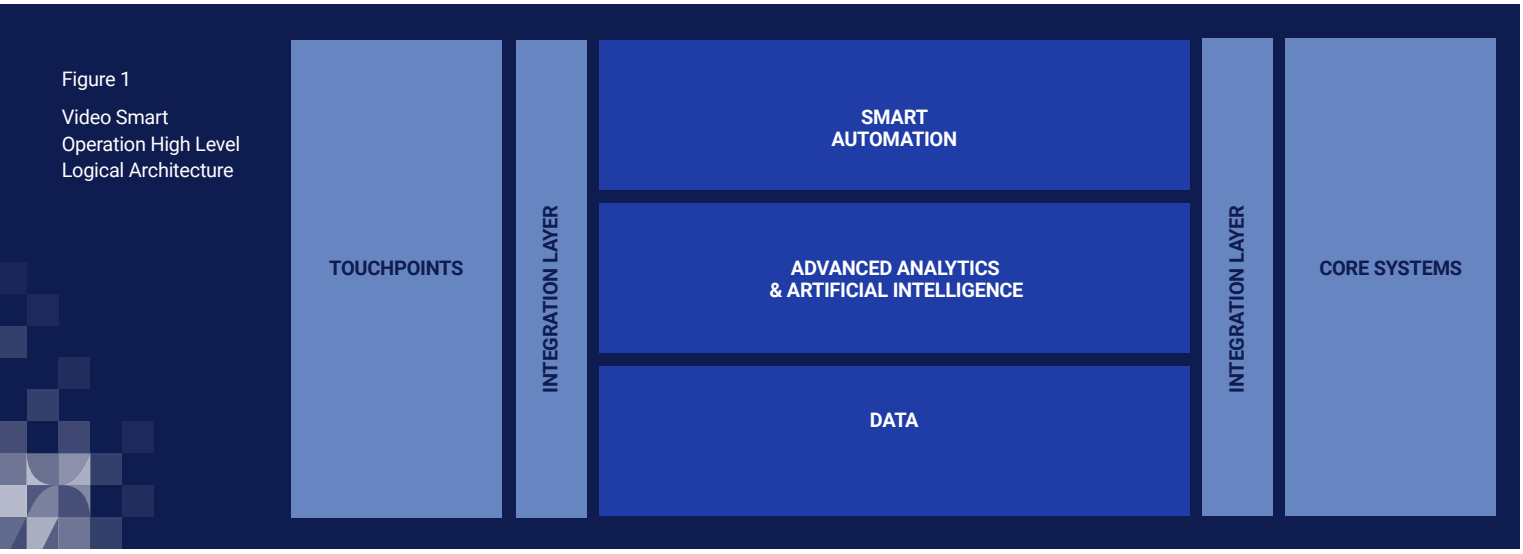
The journey toward Video Smart Operation

For a Media company to adopt Video Smart Operation, must be able to build a flexible, uniform and scalable architecture capable of responding effectively and promptly to market demands.

To do this, it is necessary to have an automation strategy that considers both business needs and technologies already present in order to choose the most suitable path for new technological capabilities introduction necessary to enable Video Smart Operation.

Figure 1

Video Smart Operation High Level Logical Architecture



According to Gartner (Navigate Optimal Routes for Process Automation With RPA, iBPMS and iPaaS) and the experience in the field, the reference logical model for the implementation of VSO must include the following three macro blocks:

1

The Smart Automation building block, a combination of Business Process Management, Robotic Process Automation and Artificial Intelligence technologies which together empower rapid end-to-end business process automation and accelerate digital transformation.

2

The Advanced Analytics building block, the autonomous or semiautonomous examination of data using sophisticated techniques and tools, typically beyond those of traditional Business Intelligence (BI), to discover deeper insights, make predictions, or generate recommendations. Artificial intelligence supports and expands AA possibilities, mimicking human abilities to perform tasks, such as speech and image recognition.

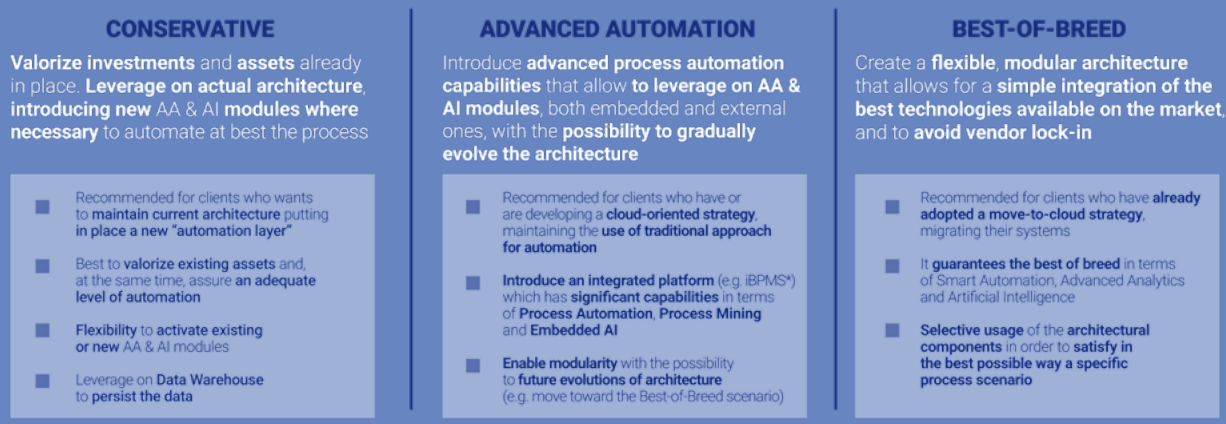
3

Data, the complete set of layers that are able to perform the ingestion, transformation and storage of data collection. This set of layers is responsible for storing the data in both raw and transformed formats, to enable the subsequent operations on the data.

In order to provide at the same time a comprehensive and concise response to the different business needs and technical requirements of our customers, we declined this unique High Level Logical Architecture in 3 different Architectural Scenarios selected with respect to three main strategic points of view.

Figure 2

Three main scenarios to empower your architecture with SA, AA & AI



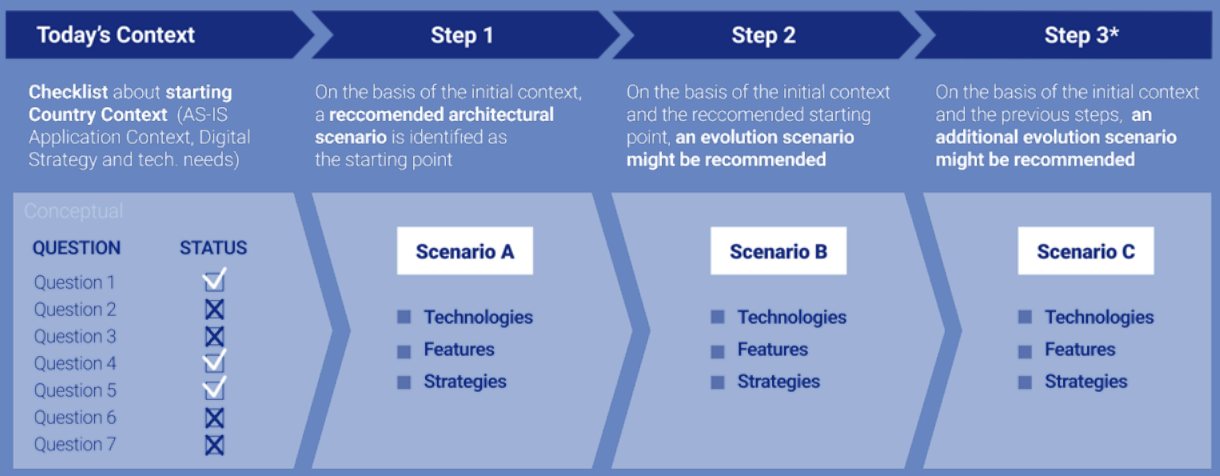
- The **conservative scenario** valorizes investments and assets already in place. It also leverages on actual architecture, introducing new AA & AI modules where necessary to automate at best the processes.
- The **advanced automation scenario** introduces advanced process automation capabilities to leverage on AA & AI modules, both embedded and external ones, with the possibility to gradually evolve the architecture.
- The **Best of Breed scenario** creates a flexible, modular architecture that allows for a simple integration of the best technologies available on the market, and to avoid vendor lock-in.

From our experience, it emerges that depending from the context and the strategy, organizations can adopt one of these scenarios or a hybrid approach that mixes some capabilities of each scenario. But how is it possible to determine the most suitable scenario for a company's strategy?

To help our customers, we have identified a set of input factors to find a recommended scenario or a possible journey through evolving architectural scenarios, as illustrated in the example below.

Figure 3

Scenario Path SelectionAA & AI



In the following paragraphs we will illustrate how the path to VSO of one of our large Media & Broadcasting customers was identified.

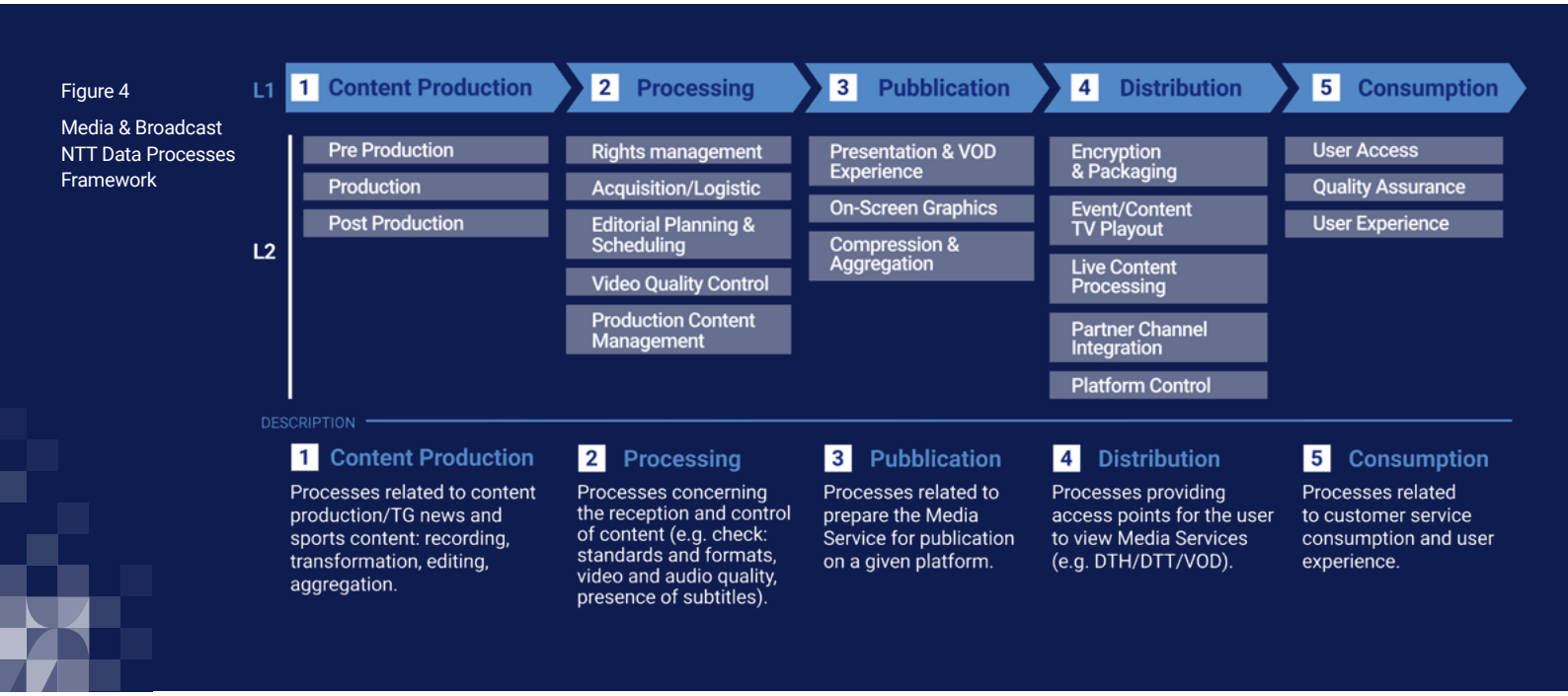
Solutions for the Media industry

Thanks to our experience developed with a key broadcasting player, NTT DATA finds it useful to apply Hyperautomation technologies in a wide range of applications in the Media & Broadcasting industry operations, allowing at the same time process streamline and operating cost reduction.

Therefore, the improvements that can be introduced on the Media Broadcasting Content Supply Chain are remarkable, where the most operation manual processes, time and effort consuming are concentrated.

Figure 4

Media & Broadcast NTT Data Processes Framework



For example, starting from the "Content Production" phase, in the dubbing process it is possible to introduce AI to reproduce human voices and support the operator in audio / video synchronization.

During the "Processing Phase", precisely in the editorial planning and scheduling process, it is necessary to guarantee the broadcasting of all live events. With the arrangement of a "Data Centric" model integrated with Robotic Process Automation, it is possible to simultaneously update the devices when changes are made to the schedules, thus avoiding the operator to manually and constantly checking all the changes.

Still in the Processing phase, another costly process in terms of effort is Video Quality Control (VQC). VQC is essential to ensure that the video complies with current regulations and technical and editorial standards. In this context, Artificial Intelligence can make a valuable contribution to carry out automated quality checks on videos or, for example, create subtitles in different languages in a short period of time.

Another fundamental process to guarantee an optimal user experience is the one related to the control of all content transmitted on the various platforms.

This process is called Quality assurance and it is done during the Quality Assurance phase.

Here, the combination of RPA and Artificial Intelligence can carry out the content control process on different platforms in a much shorter time. For example, RPA can be used to compare what is reported on the platform and what is reported on the reference database while Artificial Intelligence can carry out checks on images, videos and audio.

The examples shown above represent only a small part of the activities that operations carry out during the Media Broadcasting Content Supply Chain, and which could be automated through the combination and / or use of new technologies, such as Artificial Intelligence or RPA, integrated with a “data centric” operating model.

Making the case for Video Smart Operation

Thanks to the deep knowledge of the Media Broadcasting Content Supply Chain sector processes, given by experiences on different key broadcasting players and also leveraging on projects in other sectors, NTT DATA has developed a framework that allows to define the innovation strategy to enable the VSO in the Media sector.

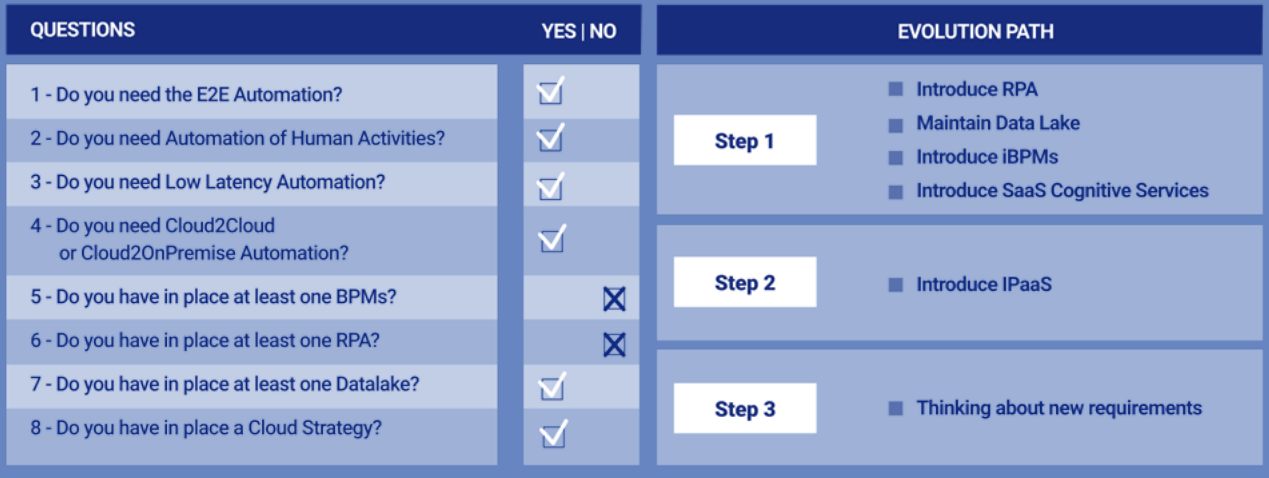
In fact, based on the technologies in use and the strategies the company intends to pursue, the framework allows to identify a possible evolving architectural path scenarios to effectively introduce Hyperautomation technologies and tools.

To do so, NTT DATA has designed and developed an approach structured in the following 6-steps:

- **Process mapping**: identification of the processes with high manual effort, the departments and the main systems used
- **Use case/initiatives definition:** collection and classification of a significant number of use cases/initiatives on the identified processes in order to identify the main architectural functional capabilities;
- **Functional capabilities definition**: collection and classification of a significant number of functional capabilities depending on the identified use cases;
- **Technological capabilities definition**: collection and classification of a list of technological capabilities depending on the identified functional capabilities;
- **Technological gap definition**: Identification of three scenarios Conservative, Advanced and Best of Breed (described above);
- **Maturity Assessment**: Definition of the strategy that the company must adopt to go toward VSO and so toward the previously identified scenario. To do so, NTT DATA has implemented an ad hoc tool to target the VSO through the use of a questionnaire which, based on the answers given, identifies the most suitable digital evolution plan.

Below is shown an evolution path example emerged from the answers given to the questionnaire by one of our high Media client.

Figure 5
Maturity Assessment Tool



On the basis of the answers, it is clear that the client does not have a high level of automation, but at the same time, it manifests the need to move towards a highly automated structure.

NTT DATA model propose an evolution path with a Hybrid Scenario (More components from conservative + more components of Best-of-Breed) with the introduction of the iBPMS, Saas and RPA.

Subsequently, as second step, the model propose to add more components of Best-of-Breed scenario introducing iPaaS.

The maturity assessment is based on the following rationales:

- **Introduce an iBPMS** when there is the need to have an E2E automation and there is no BPM in place
- **Introduce RPA** when the strategy is to automate human manual activities
- **Design a cloud strategy** and put it in place in case it is not already present
- **Introduce SaaS** cognitive services when there is the need to have an AI Flexibility and there is already a cloud strategy in place. Alternatively, if there is no cloud strategy Maintain or evaluate to introduce on premise cognitive services
- **Introduce IpaaS** when there is the need of a Cloud2Cloud or Cloud2OnPremise Automation and the cloud strategy is in place

Conclusion

Today's media industry is complex and multifaceted. Anywhere, on-demand access to content in the most desired format is putting pressure on providers and creators to adapt as channels and platforms multiply and choices continue to grow.

If a global media company wants to ensure to deliver low-latency, high-quality video for its customers and their viewers, service orchestration and automation are no longer just 'nice-to-haves' – they are essential to realize the full potential of the operations and thrive in an increasingly competitive marketplace.

In conclusion, the benefits of VSO are many and media companies need to move towards this trend to be able to remain competitive with a proper incremental strategy that depends on company current capabilities.

Key takeway

1 Establish holistic mapping and prioritization of collective initiatives, rather than islands of task automation, to ensure synergistic and coordinated business outcomes.

2 Decisions on what to automate are made strategically and are premised on targeted business outcomes for either quality, time to market, business agility or innovation for new business models.

3 Operation automation represents today the privileged way to obtain the resilience and operational efficiency that are essential to compete in the modern market.

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