How to Evaluate NLG Software in Financial Services

Whitepaper

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Abstract/Summary:
Financial services offer unique challenges for software companies such as the importance of security and the need for any advice given to be compliant. This means that financial services companies need to ask software vendors the right questions before deciding which vendor to choose.
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Why is NLG Important

So why, you may ask, did Gartner choose to analyse such a seemingly small subsection of AI technology? Of course, we can’t claim to know their thinking completely, but the answer may lie in the importance of language and the value of data in today’s business.

It’s not clear who was the first person to coin the phrase “data is the new gold” but it has been attributed to everyone from entrepreneur Mark Cuban to Indian PM Narendra Modi¹. Regardless of the phrase’s origin, it has been taken as a truism and it kicked off a “data gold rush” as companies scurried to collect more and more customer data. Now we have: cookies to track online customer behaviour, CRMs to store data, the rise of data brokers (like Factset in finance) selling even more data, and the Internet of Things (IoT). And all were based on the idea that when it comes to data more is actually more.

To put it another way, Google is admitting that data for the sake of data doesn’t have value, you need to be able to understand and action the data, that is where the value will come from. It is arguable that this rush to collect more and more data that resulted in the GDPR rules that came into effect in 2018 but the results of GDPR are more obvious.³

Now, partially as a result of GDPR, there is a growing level of data maturity. Business understands that data for the sake of data is worthless. The focus is on creating the “data-driven” enterprise where all decisions across the company are actually based on data instead of on the “gut-feeling” of a manager. Data isn’t the new gold, the use of the data is. That is to say turning raw data into actionable insights as quickly as possible and using data to automate processes to save time and keep employees engaged.

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¹ Cuban is credited in 2017 in a Credit Suisse Article. The Indian PM made the phrase his own in a speech in Houston, TX in 2019.


³ Murphy, Margi & Field, Matthew, GDPR: After the Wild West rush for data, a law for the digital age., May 19, 2018.
The Importance of Language

This is where the importance of language comes in. As human beings, we communicate and explain data through language, and we use language to explain complex information and recommend actions.

A small minority of the population are completely data literate, that’s why there is such a premium on data scientists. In fact, the US alone has a shortage of 150,000 data scientists according to a LinkedIn Study, so it’s clear that companies can’t afford to put data scientists in every business unit.

The only answer to the talent shortage and the need to create a data driven enterprise is to automate the analysis of data and explanation of that analysis. But if you want to quickly explain data and what actions to take in response to data, you need to use language. To put it in technical terms, Human being’s “user interface” is language. NLG technology is critical as we move forward because it is the only technology that turns data into human language.

NLG versus the Template

It’s important to define what we mean by Natural Language Generation and how this differs from a template. Anyone who’s used Mailchimp is familiar with a template. For example a template could say the following “Dear <<INSERT NAME>>, I wanted to email you about <<COMPANY NAME>> and your marketing needs.” A template is a simple and low-cost way to generate simple descriptive text that doesn’t change based on variables, that is to say this sentence only changes by adding a name and a company name. Some so-called NLG vendors try to market template software, calling it NLG and charging thousands for content that could be generated with a simple template.

Natural Language Generation works differently. NLG software is programmed with the rules of grammar of the languages in which the software writes. This means that the text completely changes as the data changes behind the text. Enterprise NLG Software companies also include some sort of analysis or reasoning process before the text is written. The end result is that true NLG software can generate summaries of data as well as explanations and even suggestions of the next best steps. These abilities mean that NLG software can write narrative based on complex data sets and following complex rules. This ability is critical in financial services where the narrative is based on complex data sets, which often come from different locations.

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4 LinkedIn Workforce Report, August 2018
Separating the Reality for AI Myths

Whenever you talk about a software in the AI space, you need to take a moment to separate the myth from the reality.

All NLG Require configuration

The truth is that Natural Language Generation needs to be configured for each use case you have in mind. There is no magic Plug and Play NLG. Some vendors will sell pre-configured application but those were still configured and if you want those applications to use your business’s means of analysis, or your business’s language and way of writing, then these off the shelf applications will need to be rebuilt and reconfigured.

All NLG Projects Require Integration

You will need your NLG application integrated into your tech stack. There will also be work to do to connect your data sets to the NLG software. Some NLG vendors are much more advanced than others when it comes to connecting to data.

Machine Learning for NLG

Machine Learning is one of the biggest buzzwords of the day, and you can see this in the marketing of certain NLG companies who say “yes, of course we do Machine Learning, we do Language Understanding, we do it all”. The truth is that the most advanced NLG solutions actually employ a hybrid approach. That is to say they use machine learning to suggest data analysis rules, which a human user approves of rejects. This hybrid approach speeds up development time but ensures that whatever text is written is fully traceable.

Traceability is critical so that you can show WHY advice is given and so that the software can explain WHY as well. Purely Machine Learning driven NLG is what we call a “black box” technology. This means that advanced algorithms analyse the data and reach a conclusion for a reason that the user doesn’t understand and which the software can’t explain in the written text.
Criteria to Evaluate NLG Solutions
1. Ability to Scale.

You aren’t buying technology for your business as it is right now, you’re buying for the future as well. If the tech really does work for you the way you hope, then you will want to scale it up. That means going from a few users to a thousand or more depending on your business. The worst possible outcome would be to find a great use case and technology and then discover after deployment that the technology can’t scale up in your business.

Questions to Ask NLG Vendors

These are some of the questions you need to ask to see if your NLG vendor’s software can actually scale.

❓ Is the NLG Software Self-Service?

Self-service has become a sort of buzzword with lots of companies saying “we offer a self-service” solution but you need to understand what they mean by this. Eventually, you will want to be able to build and edit applications yourself. It isn’t scalable to rely on a third-party software company or their partner to build all of your applications, just like calling a company to prepare your Excel spreadsheets isn’t.

You need to be able to manage these projects yourself so you can deploy the tool across the organization. There is also a cost element here, if you have to call a third party every time you need to make a change to an application, the costs will skyrocket. Ask the NLG vendor for a free trial of their software. Without training you likely won’t progress to far in that free trial but if the NLG vendor can’t even offer you a free trial then you should disqualify them.

Even if you don’t plan on creating or maintaining the tool yourself, a self-service access to all layers of the NLG setup is important to avoid lock-in with single partners. If partners get different access level, a business decision on switching to a different managed service provider will be impossible to execute on.

❓ How many concurrent users work together on an application?

This is critical if you want to be able to scale up. Eventually, you will need multiple users to be able to work on the same major application. For example, you will have a compliance expert putting in rules relating to regulation for one section and an analyst working on the text in the next paragraph. Multiple concurrent users is critical in all modern enterprise software and surprisingly this feature is not widely available among NLG “self-service” vendors. This implies the need for publishing/versioning workflows and you should be able to define a continuous delivery and -testing architecture for your application.

❓ How many reports have you run at the same time?

Again, this is a scale question. You need to understand at what point the software becomes overloaded and slows down. Look for specific numbers here not vague statements. They should be able to say on such and such a server, the software has run up to x amount of reports at the same time, or you can test it with a certain number of requests per second.

❓ What are the SLA options?

For business applications, promises on availability and reliability should be available as Service Level Agreements. While you might not want to pay extra until it achieves business criticality, the vendor should have standardized documentation and contracts available. Publicly shared application status pages with a history of past incidents are a de-facto standard in the SaaS world and should be available.
2. Multilingual

Financial services and Banking are global industries and, in many cases, and locations documents must be written in multiple languages even if English is the dominant language of business. Again, this also relates to scale, does your business want to move into a new market in the next 5 years? If an NLG vendor only works in one language, you should disqualify them. If you work in a large enterprise multilingual ability is critical for your long-term use of NLG.

Question to ask NLG Vendors:

❓ How does your Multilingual NLG work? Is it a sort of template where we just add values?

❓ Or does it know the rules of grammar in the languages it works in?

This question gets to the heart of what the vendor means by “multilingual”. If the software is truly multilingual, then it will have the rules of grammar for relevant languages encoded in its software.

3. Transparent & honest pricing.

Understanding a vendor’s pricing model is critical in the NLG market. Because NLG is a new software pricing it is a challenge for vendors, and many have taken very different approaches. Some NLG companies make you pay per word, some make you pay per page and others have such complex pricing that you don’t really know what the total will be until the end of the project. If an NLG provider can’t describe the pricing quickly and clearly, don’t consider them.

Questions to ask an NLG Vendor:

❓ Is there an additional cost for development or do we do it ourselves?

❓ What does your price include? Is it unlimited or based on number of pages?

❓ Is your pricing based on the number of servers?
4. Input data and integration.

The point of NLG projects is to put your business's data to work for you or at the very least to automate away data-driven writing. So, it is critical that you understand what types of data an NLG software requires and in what format.

This is a critical point because some NLG vendors require a very static input and this would create a huge amount of work on your side before the NLG project can even get started. You should ask to see how the software connects to a dataset, if the vendor can’t show you this, then you should disqualify that vendor.

Integration doesn’t just mean connecting to your data, you also need to think about where you would like the narrative generated and what integration that might entail. Again, if there is an integration cost who pays for it and how long will it take?

Questions to ask an NLG Vendor:

❓ What format does the NLG provider need the data in?

❓ Can the software connect to multiple different datasets for the same application, or does it only work off of one?

❓ Where does the software render the text? Ask about integration costs and time for wherever your use case needs the narrative to appear.


Since the Enterprise NLG market is limited to five major enterprise players it can be difficult to know the number of customers they are set up to support. Some NLG companies only have 20 or so clients and so are not used to providing customer service at scale, or make you rent your dedicated support team later on, when it becomes apparent you want or need more support. You should ask about their customer service team and ideally speak to them.

Questions to ask NLG Vendors

❓ What are their response times?

❓ How do customers communicate with the customer service team?

❓ How is information communicated within the customer service team?

❓ What happens if your dedicated customer service manager takes a few weeks off for vacation or gets sick, while you are about to push your new major NLG application in production?

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6. Security

Security is the number one concern of many Financial Services and banking buyers but it isn’t always front and center in the NLG space. According to the Gartner Market Survey, the vast majority of NLG vendors offer a cloud, on premise or hybrid solutions. Gartner, however, does not discuss vendor security approaches. Security is of the utmost importance in two of the largest markets for NLG: Financial services & Pharmaceuticals. If your NLG vendor’s software is non-compliant, or worse open to hacking, you will expose extremely sensitive data which could cost your company huge sums of money in fines.

Some NLG vendors lack any security processes and attempt to bypass this by pushing for on premise installation. But on-premise deployment doesn’t equal security! Check certifications and partnerships with leading cloud providers along with on premise ability. On the implementation side, to reduce your GDPR exposure by limiting the personal data that you actually use for the NLG application.

Questions to ask NLG Vendors:

❓ If you work in Pharma, you should ask if the NLG vendor is HIPPA compliant.

❓ Ask for a list of penetration tests, or their approach to certify the setup.

❓ If in Europe or using data in Europe, verify that the vendor is GDPR compliant.

❓ Ask for a list of the vendor’s cloud partners.

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Does your company have specific security concepts for your individual cloud application scenarios?

KPMG/Bitkom Research Study © Statista 2020
Conclusion

Hopefully this guide has given you a series of criteria and questions to ask NLG vendors whom you are considering for a project. The NLG market is evolving quickly, and different vendors have different specialities from which their software was built. For example, several vendors came out of English Language sports reporting and these vendors maintain a focus English language only.

Use cases for NLG are continuing to expand as more and more companies work to leverage their data. The thinking on NLG is evolving too, in 2015 Gartner argued that NLG was ‘the last mile in Business Intelligence’ and would succeed as plug-ins describing graphs in plain language. In contrast, today Gartner has a larger vision, saying “NLG is useful wherever there is a need to generate text or spoken content from data”. As the use cases for NLG multiply and companies begin to deploy it en masse, they need a framework to evaluate NLG vendors and to cut through the rhetoric to see which vendor is the best for them.

This brings us to perhaps the most important overarching point. In the AI space in general, there is pressure on companies to appear like magic. Some vendors have bought into this magic vision. Therefore, when you are evaluating a vendor and asking questions, ask to proof of the answer. For example, ask to see the data integration, see the tools, meet the customer service team. No matter what vendor you choose, you will be making a significant investment of time and money, so it makes sense to do your homework first.

Globally, we believe that NLG is the logical next step in the digitalization of the enterprise. Companies have invested in data collection, storage and visualizations but the next big change is the focus on data-driven decision making across the company and the elimination of human-conducted repetitive tasks. NLG addresses these two new challenges since it can simultaneously automate repetitive writing tasks and empower everyone in an organization to make data driven decisions. After all, with NLG all employees need to do is click, read and then act!
Appendix

About the Authors

Nituno (London) is an B2B Consultancy dedicated to helping B2B software companies understand their markets and sign enterprise deals, while helping clients choosing the right vendors.

Nituno was founded by the former Head of Sales and Head of Marketing in a B2B AI company. The marriage between sales and marketing is at the heart of Nituno. Nituno believes that tech companies need to practice what they preach and adopt new technologies to help them scale faster.

AX Semantics is a AI-powered, Natural Language Generation (NLG) software company with its roots grounded in content and storytelling. Our sophisticated, yet easy to use SaaS-based software makes automated content generation accessible to customers of all sizes, is used widely within the e-commerce, business, finance and media publishing sectors. Available in 110 languages, AX Semantics works with more than 500 customers, including globally recognized brands like Deloitte, BASF, Ebner & Stolz, Porsche, and Nivea. AX Semantics was named one of the world's world's top five providers of Natural Language Generation platforms by Gartner, and a top emerging company in the NLG market by Forrester.

AX Semantics is changing the way content is created, published and viewed. Our software allows thousands of users to successfully automate text within two days, and gives people the space to develop and nurture their creative originality.

Headquartered in Stuttgart, Germany with an additional office in Sunnyvale, California, AX Semantics is a privately-held company backed by Airbridge Equity Partners. Follow us on social at Twitter, LinkedIn, Instagram and Facebook, or learn more at https://www4.ax-semantics.com.