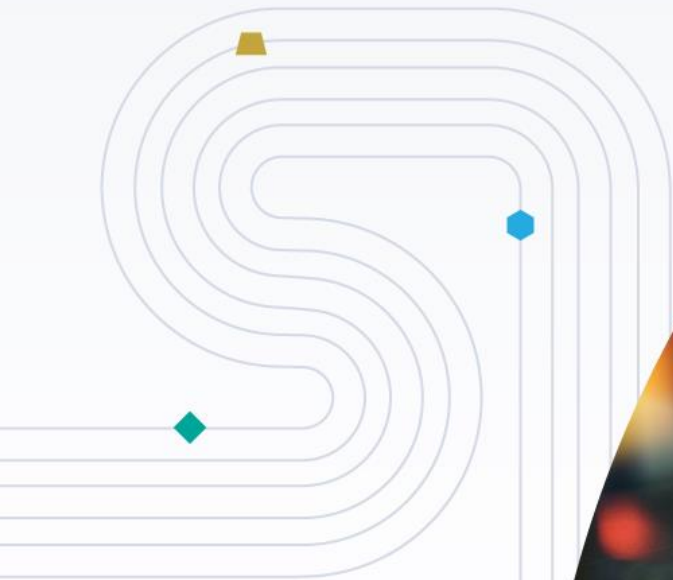


WHITE PAPER

# The signal-oriented bank of the future





## #1 The power of deep learning to drive customer engagement

Over the past twenty years, organizations have applied big data and quantitative analytics to the decision-making process across the enterprise. In other words, they have become data-driven organizations.

Data-driven organizations have proven to be the most successful at delivering innovative product design, agile business processes, personalized direct marketing, and the digital transformation of their customer-facing processes.



***Over the next ten years, successful banking organizations will evolve from being data-driven to becoming signal-oriented. This paper will look at the functionality that deep learning and foundation models will soon be capable of offering to banking and financial institutions and how this potential can be tapped to reimagine the customer experience.***

Deep learning and foundation models will provide banking organizations with the capability to make human-like decisions, allowing them to evolve beyond workflow automation to workflow independence.

Deep learning and foundation models will be able to provide actionable insights - in the banking industry often referred to as signals, derived from structured and unstructured data to inform business processes and drive positive outcomes. For example, a signal of "churn risk" is generated when a customer with a high baseline risk of churn says "I want to close my account" to a call center agent after discovering a fraudulent payment.

## #2

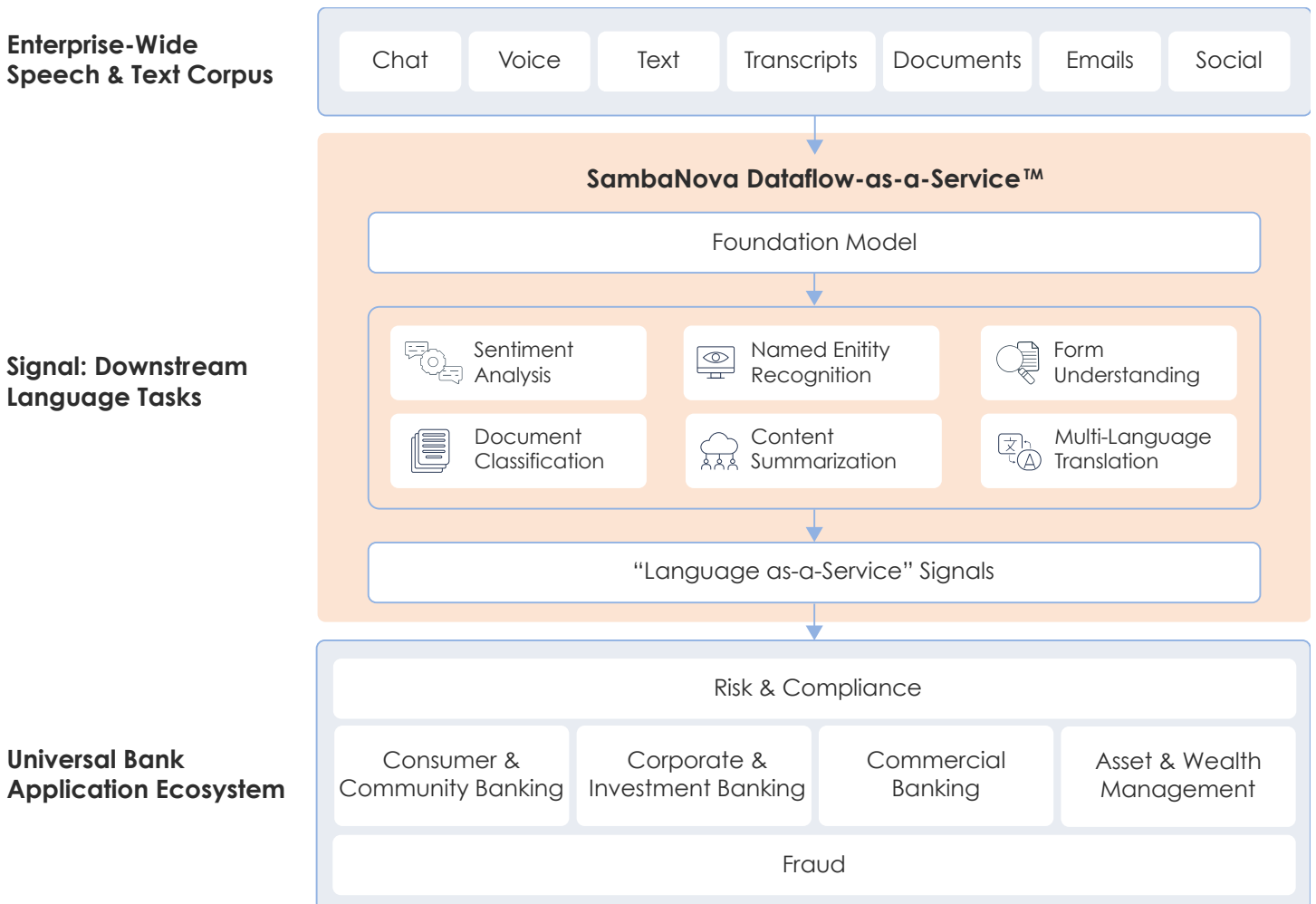
### Identification of the signal via deep learning models

Deep learning and foundation models power applications like Natural Language Processing (Google translate), User Content Recommendations (Netflix) and Computer Vision (Facebook photo facial recognition). Deep learning and foundation models are the state-of-the-art for artificial intelligence; it's the "tip of the spear".

Organizations will become "signal oriented" by enabling deep learning and foundation models at scale in order to better understand their customers, predict their customers' needs, and optimize the value they provide to their customers – all with results which are directly measurable.



**A great illustration of the potential of deep learning and foundation models to transform business processes is in the customer-facing call center. Customer-originated speech and text data is the most underleveraged information asset in the enterprise, yet it has the greatest potential to provide insights as it is the one time that customers share, in their own words, what they want and need.**



Speech and text are examples of unstructured data, meaning that the data does not fit into a tabular row/column format and is unlabeled, both of which are necessary conditions for supervised learning modeling techniques. As a result, organizations have been relegated to using traditional text analysis techniques such as Naïve Bayes which use character- and string-based approaches to identify dataset features such as document classification, sentiment analysis or named entity extraction.

With the emergence of deep learning and foundation models, a radically innovative approach to speech and text analysis will become possible. Organizations will soon be able to unlock meaningful insights of customer intent and propagate these signals across their application ecosystem to drive in-the-moment customer interactions facilitating the strategic shift from traditional to digital channel delivery.

When applied to unstructured data, deep learning and foundation models will essentially create an understanding of language structure which presses the point that organizations are currently approaching language tasks in the wrong order – their AI systems should first understand language structure before defining tasks. A contextual understanding of language provides a richer representation of the communication and can produce a more salient signal for distribution as a business service via enterprise application workflows.



### #3

## The evolution of deep learning: foundation models

Foundation models are very powerful deep learning models that are defined by their massive scale which enables them to unlock insights trapped in unstructured data, in-context learning through powerful emergent capabilities with zero and few shot prompts, and high versatility with the ability to solve dozens of different tasks with a single model. In the natural language domain, GPT-3 is a Foundation Model with 175 billion parameters and has the potential to perform tasks such as document summarization, document classification, named entity extraction and sentiment analysis with a single model.



***Foundation model outputs have the potential to become inputs to upstream business models. This approach will significantly collapse a portion of the thousands of models spread across the enterprise down to a handful of foundation models, eliminating considerable hidden costs in the maintenance of the model catalog while establishing a model development process with more agility and control.***

Foundation models will play a pivotal role in organizational data management strategies. The foundation models will be able to assist with defining the value of the data and the potential change in value over time based on the access patterns of the data asset in the model pipeline. The output signal can then become further enriched and emergent in its capabilities as its value is realized via the distribution of the signal across the organization's application workflows. This reduction in data and model redundancy will be the key to environmental sustainability – a topic which is a board-level discussion.

## #4

### Propagation of signals throughout the enterprise

Value can be derived when an output signal from a Foundation Model is turned into a business service that allows consumption of that signal by enterprise business workflows.



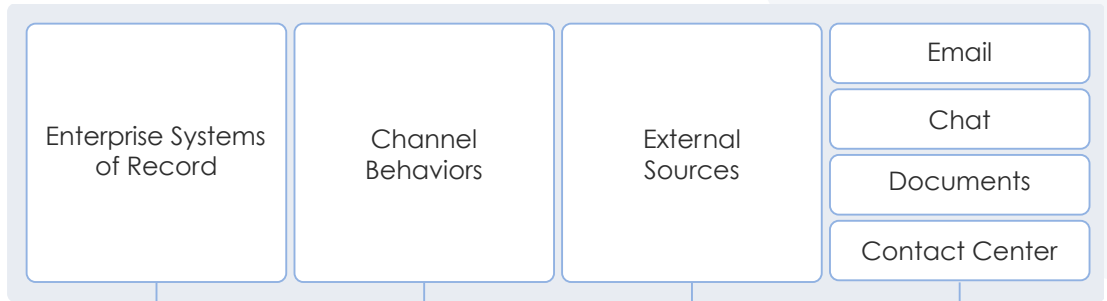
*At SambaNova, we understand that for customers, value is not achieved by deploying a model as a point solution but rather from the number of times that signals are persisted and consumed across application workflows. In this illustration, we are taking the position that all data, both structured and unstructured, will flow through the SambaNova platform to deliver value.*

*Data will be able to stream into the foundation models which then emit output signals that can be utilized as a business service and seamlessly integrated within the business workflows across the vertical and horizontal application ecosystem of the enterprise; in this example, “Next Best Action”.*

Organizational obsession with customer-centricity as a strategic imperative will be materialized via the hyper-personalization of customer interactions. This will allow the acceleration of the migration of routine servicing activity to digital channels. Any investment in personalization that does not include speech and text is undermining the strategic initiative by not addressing the obvious statement that customer service begins with an understanding of the customer task requiring resolution and the necessity to draw upon customer verbatims to focus on customer task.

At SambaNova, we believe that the bank of the future will need to be able to ingest all customer-generated data, including unstructured data such as speech and text. To achieve this, they will need a platform that is capable of evaluating these inputs and producing signals to inform the “Next Best Action” which will then be spread across the bank’s enterprise workflows including servicing channels, payments platforms, fraud mitigation processes, and direct marketing tools.

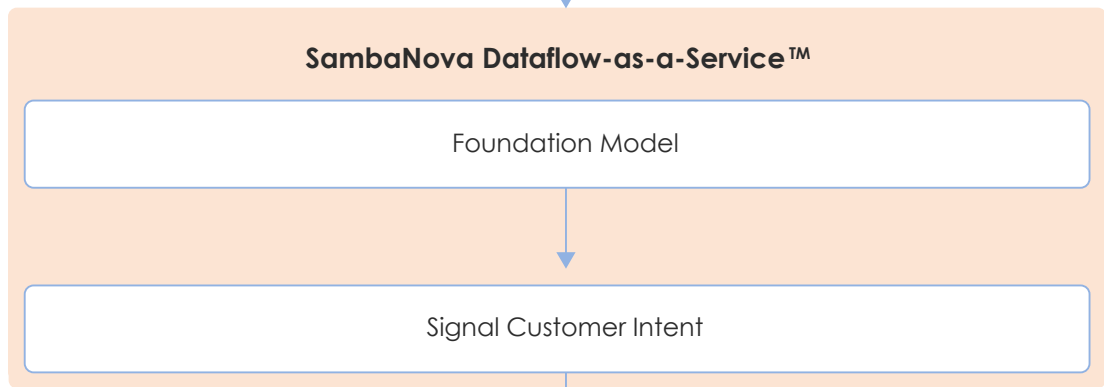
**Data Flow:  
Sources**



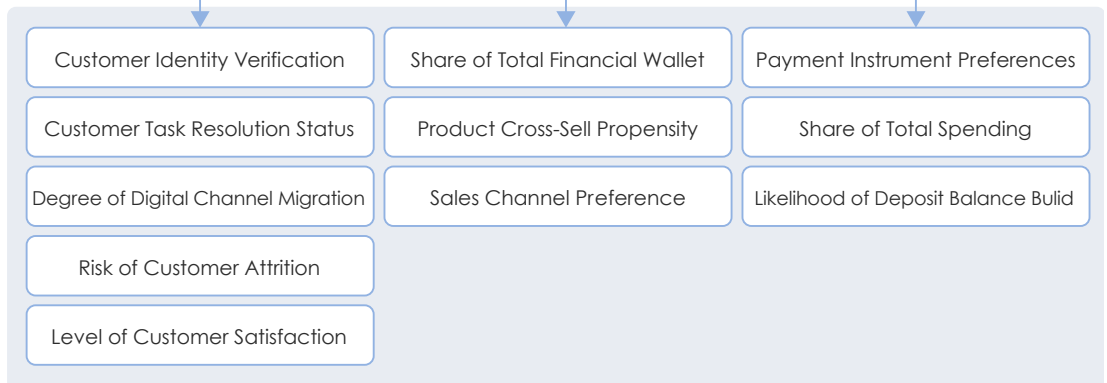
**Data Flow:  
Multi-Structured  
Datasets**



**Signal:  
Democratization**



**Singal:  
Next Best  
Action Workflow**



## #5

### Evaluation of the impact on the customer

Banking organizations will be able to identify the sequence of activities within the contact center workflow for resolving the customer's task within their banking journey. This will include the technology components of the contact center ecosystem, the client and banker interaction points within the workflow, the flow of data available to resolve the customer task at each step in the workflow, and the associated business metrics captured to measure the bank's workflows efficiency and effectiveness.

Given the data available, the ability to produce signals can positively impact the core business metrics. By linking the metric impact on a step in the process, banking organizations will be able to further link to its impact on customer experience. The customer experience links to customer retention, and retention to the critical bank outcomes of revenue preservation and cost savings relative to the number of deposit clients of the bank.



***The banks of the future will need a platform that will sit upstream and the input data, regardless of structure, will be threaded into a set of foundation models running in parallel to radically accelerate the throughput, velocity, and salience of signals as outputs, which are disseminated across the various application services at enterprise scale.***

This platform will need to integrate with the client's data and analytics supply chain to represent the flow of data and how it will be created, captured, organized, stored, and accessed for analytics. Additionally, this platform must not disrupt, but rather simplify, the process of deploying AI by seamlessly integrating deep learning and foundation models into the supply chain and microservices design pattern for application services.

As an example, organizations will be able to highlight speech and text that is processed and persisted as a language signal to an enterprise analytical CRM application to be picked up and leveraged within the existing arbitration logic for Next Best Action workflows; the same signal (or derivative thereof) can potentially be leveraged within the risk decisioning process of the new product application.





## #6

### **IN SUMMARY: The impact on customer engagement**

Organizations are struggling to deploy the deep learning and foundation models necessary to exploit their extensive investment in harvesting data – especially customer-generated speech, text, and other unstructured data – and to use predictive models to drive customer engagement. To achieve this, banking organizations will require a platform that delivers foundation models that will be capable of persisting signals of customer intent throughout their business workflows, eventually allowing these signals to drive critical-path business outcomes via a deep understanding of their clients.




## Next steps

If you would like to learn more about how banking organizations are preparing for the future, visit [SambaNova.ai](https://SambaNova.ai)

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Customers turn to SambaNova to quickly deploy state-of-the-art AI capabilities to meet the demands of the AI-enabled world. Our purpose-built enterprise-scale AI platform is the technology backbone for the next generation of AI computing. We enable customers to unlock the valuable business insights trapped in their data. Our flagship offering, Dataflow-as-a-Service™, overcomes the limitations of legacy technology to power the large complex foundation models that enable customers to discover new services and revenue streams, and boost operational efficiency. Headquartered in Palo Alto, California, SambaNova Systems was founded in 2017 by industry luminaries, and hardware and software design experts from Sun/Oracle and Stanford University. Investors include SoftBank Vision Fund 2, funds and accounts managed by BlackRock, Intel Capital, GV, Walden International, Temasek, GIC, Redline Capital, Atlantic Bridge Ventures, Celesta, and several others.