SmartMessage Connect – Platform Architecture

A Robust and Flexible Enterprise Grade Chatbot Platform
1. SMARTMESSAGE MARKETING PLATFORM

With SmartMessage’s omnichannel campaign management solutions and real-time event processing capabilities, management of all campaign interactions across inbound and outbound channels are consolidated in a single platform. You can create, execute, optimize, and evaluate all customer interaction strategies and run automated campaigns and event-driven programs.

Our products and solutions can be deployed rapidly, customized easily and integrated with any third-party applications. Our user-friendly interface and our extensive API allow you to manage, report and integrate campaigns at all scales.
2. SMARTMESSAGE CONNECT

The SmartMessage Connect Bots platform gives enterprises every necessary component to clear the challenges of “how” when it comes to designing, building, testing and deploying omni-channel chatbots. Our one-stop solution provides a scalable, secure, and repeatable foundation to create chatbots that perform a wide range of intelligent tasks, communicate with people and systems while leveraging data to drive actionable customer engagements across channels.

2.1. SmartMessage Connect Key Features

- **DEVELOPER FRIENDLY** – Easy to begin, easy to use. Get faster time to value and integrate across channels, devices and platforms.

- **FLEXIBLE DIALOG BUILDER** – Easily design logic driven dialogs with an intuitive interface, no coding required.

- **DECISION TREES** – Seek clarification with the user in order to refine the answer.

- **MULTI-PLATFORM SUPPORT** – Supports many platforms, including FB Messenger, WhatsApp, Twitter, Telegram, Slack, SMS, Email & Web.

- **CROSS-PLATFORM DEPLOYMENT** – Build bot once and deploy it across many platforms with the flip of a switch.

- **LIVE TESTING** – Test in real-time throughout the bot building process from a single interface.

- **LIVE AGENT HANDOFF** – SmartMessage Connect has a built-in Live Chat feature which allows you to monitor all conversations between your chatbot and your users from one single interface; hence allowing you to take over the conversations seamlessly.

- **REAL-TIME ENGAGEMENT & MONITORING** – Real-time response to all recurring questions and real-time visitor and conversation monitoring of all channels from a single interface.

- **RICH MESSAGING** – Go beyond text with images, GIF’s, audio/video files or customized buttons that can directly link to your website. Upload and store your rich content in our integrated Media Gallery to easily access branded content.

- **BROADCAST MESSAGE** – Send out broadcast messages to some or all your users across channels, devices and platforms.

- **CENTRALIZED REPORTING** – Get detailed user and bot analytics with centralized reports. Track the number and length of conversations, messages sent/received, active hours and more.
3. COMPONENT ARCHITECTURE

The architecture diagram below provides a visual representation of the major components, tools and integrations of the SmartMessage Connect Platform:
4. PLATFORM COMPONENTS

4.1. Bot Builder

SmartMessage Connect includes a simple, web-based Bot Builder tool with a graphical Dialog Builder tool designed to make chatbot development efforts intuitive, consistent, and easily repeatable. The tool provides components for chatbot design, development, natural language training, testing and publishing before rollout.

Dialog Builder makes creating business-logic driven dialogs simple, yet flexible.

- Steer the conversation in the right direction with multiple node types, including intent nodes, service nodes, message nodes, confirmation nodes, webhook nodes, and JavaScript nodes.
- Create your dialog flow as linear or tree-shaped. Chatbot can give suggestions automatically if you create your tree shaped dialog flow. You can create a Q&A database for your user with linear dialog flow.
- Add unlimited user expression for a single dialog node.
- Extract entities from user utterance. Use built-in entities like arithmetic, date, name, number or create your own entity with regular expressions.
- Code JavaScript nodes based on business logic when access to services via APIs is unavailable.
- Reuse previously developed nodes in current or future dialogs.
- Build IF-ELSE statements directly into nodes with conditional connectors.
- Connect to multiple services in one conversation with detached authorization.
- You can use built-in actions to set user attributes, call your company API, detect emotion with Microsoft Emotion API, get user location, use text to speech or redirect your user to another dialog.
4.2. Channel Connector

To build, deploy, and manage bots using a scalable model, they need to be built in a way that balances rapid integration with channel-specific customization. SmartMessage Connect’s Channel Connectors simplify, standardize, and largely automate the process of deploying bots to multiple communication channels, with no code required. The connectors eliminate the time-consuming burden of configuring bots with different formats and standards required by each channel, while still allowing for easy, channel-specific UI or response customization.

This section describes the Channel Connector features that make building and deploying omnichannel bots faster and more repeatable using SmartMessage Connect Platform:

Authorization Control

The Connectors allow bots to systematically adhere to channel-specific authorization and authentication nuances. This saves developers from having to determine, for every channel within a single bot configuration, how a bot will compare a user’s credentials to the information contained within that channels authentication server in order to determine appropriate access to the channel.

Channel API Handling

SmartMessage’s Channel Connectors use API’s to automatically handle the distinct connectivity requirements of each available communication channel, such as linking to Facebook, SMS to a gateway, or email to email servers. This grants access to deploy chatbots and bot tasks across channels by simply checking a box.

Auto Formatting

The Connectors automatically adapt messages to match the unique formatting used by each communication channel. Bots can then be deployed to multiple channels from a single configuration. Developers can also leverage the specific user interface and user experience capabilities of each channel and maintain consistency with the native channel experience. Additionally, bot responses can be customized on a channel-by-channel basis from a single configuration.
4.3. API Based Integrations

SmartMessage Connect is equipped to accommodate standard and custom integrations to nearly all existing systems to fit your workflows and requirements. The Platform uses an API REST API’s for bots to push or request data from your websites, systems and data sources. SmartMessage offers built-in integration with the SmartMessage Marketing Platform and Microsoft’s Cognitive Services.

Some common use cases of API based integrations:

- **THIRD PARTY INTEGRATIONS** – Link to shared services such as 3rd party API’s, authentication, payment processing, maps and more.

- **THIRD PARTY NLP SUPPORT** – Access third party NLP engines like Luis or Watson for chatbot training.

- **CALL CENTER OR CUSTOMER SUPPORT SOFTWARE INTEGRATIONS** – Hand off a conversation from your bots directly to your human agents via the customer support solution they use. Include a complete history of the conversation to provide a seamless customer experience.

- **TRANSACTIONAL ALERTS** – Send event-driven transactional notifications straight from your back-end system using API’s.

- **SMS API’S** – API’s to send and receive SMS around the globe with high deliverability.

- **EMAIL API’S** – API’s to deliver email messages to the inbox with ease.

- **FORWARD TO EMAIL** – Forward copies of filled applications or submitted forms to visitor’s email addresses.
5. **ARTIFICIAL INTELLIGENCE**

5.1. **Built-In Microsoft LUIS Integration**

Developers can seamlessly use LUIS’s Natural Language Processing Service in their bot and the bot building tools provided by SmartMessage Connect. Design and build your bot with the dialog builder and with a click of a button train your bot with LUIS to get better results.

5.2. **Training your Bot with Microsoft LUIS**

1. **CREATE** – Authorized user creates dialog flow in SmartMessage Connect and enters LUIS app credentials to train bot with LUIS.ai

2. **CONVERT TREE** – Dialog flow converts the Connect decision tree to LUIS compatible JSON format and writes it to event bus.

3. **PREPARE** – Training service listens RabbitMQ Queue, gets tree and prepares for LUIS API call.

4. **SEND TO LUIS** – Training Service and LUIS compatible JSON to LUIS AI endpoints.

5. **TRAIN & PUBLISH** – LUIS creates a new version and trains intents sent to Training Services.
5.3. Use Case

1. **SEND MESSAGE** – User can send any type of message (text, image, voice, attachment, etc.) through Facebook Messenger, WhatsApp, Telegram, Slack or Webchat. **Example:** Suppose user wants to inquire about credit cards and inputs “I want to receive information about credit cards.”

2. **GET MESSAGE** – SmartMessage Connect gets the message via customized web hooks for every social media app and channel. The platform identifies the message to trigger a flow. If LUIS is added to your bot, user utterances will be sent to LUIS.ai for intent and entity extraction.

3. **ASK LUIS** – If LUIS is added to your bot, user utterances will be sent to LUIS.ai for intent and entity extraction. LUIS returns the intent of the message and Connect matches the intent with a dialog tree. Each branch of a tree can one or more actions to do necessary operations. **Example:** LUIS returns “Credit Card” intent to SmartMessage Connect.

4. **RUN ACTION** – Connect offers a wide range of Action task such as calling external API’s or translating requests into different languages. We support 25 different built-in actions and continuously adding new ones. **Example:** SmartMessage Connect makes an API call to an external system and gets campaign information about credit cards.

5. **SHOW RESULT** – SmartMessage Connect complete the user’s task based on the extracted entity. **Ex:** Connect sends campaign information to the customer and waits for user’s input to trigger the next action.
6. PLATFORM AND INFRASTRUCTURE FEATURES

6.1. Security

SmartMessage follows strict guidelines for security regardless of industry. This section covers the security methods used to protect your data in accordance with industry standards.

Overview of the security practices applied by SmartMessage:

- Tiers are separated by firewalls
- All web service are REST API calls and use SSL encryption
- All API calls use JWT tokens
- Customer databases are separated
- Applications have limited DB access privileges
- Auditing capabilities of all system events and user-generated events
- Customer will have their own certificate to access API’s
- Firewalls and API’s are continuously monitored against attacks
- Penetration tests are performed on a regular basis and necessary changes will be implemented on our cloud servers

SmartMessage Connect keeps the minimum amount of information about users, most of the time only tokens or smart codes are stored. This way we can always get the most recent user information from social media and reduce the risk of a data breach. Every message gets encrypted and stored in a complex way to increase security.

Data transfer between each server is controlled with firewall rules. You can install some of the modules which require internet communication to your DMZ and keep important parts (like Database or Caching Server) in your secure local network*. All application modules and social media connections use SSL to increase security and prevent Man in the middle attacks.

*Available for On-Premise deployments

6.2. Audit Logs

From the beginning of the development to the end deployment every step gets recorded to log and auditing systems. Every developer follows specific security and development process. All processes are documented and revised on a monthly basis.

SmartMessage Connect Platform provides full auditing capabilities of all system events, error messages, and user-generated events, such as the addition of a new managed user. Each logged event provides detailed information such as date and time stamp of event, description, user that initiated the event (when applicable), and the IP address of the device or channel used to access the bot. Audit log data never gets deleted.
6.3. Scalability

The SmartMessage Connect platform can be scaled horizontally by distributing every component on a different server. You can find the software topology as illustrated below:

Parts of the SmartMessage Connect are discrete and decomposable. This allows the component parts to be distributed in a way that maximizes use of each compute unit (such as a role or database server). It also makes it easier to scale the application by adding instances of specific resources. Where it is possible, SmartMessage Connect uses batch operations and those operations can be distributed across multiple compute units when necessary. SmartMessage Connect employs queues to overcome performance and scalability issues.
The SmartMessage Connect Advantage: Why Customers Prefer Our Platform

SmartMessage Connect Bots Platform is a complete platform as a service, giving you the power to create, host, omni-channel bots for employees, cross-functional teams, and customers in a manner that is consistent, scalable, customizable, and secure.

Unlike chatbot frameworks and conversational services, which place the burden of constructing and managing the underlying solution on customers, our end-to-end Platform lets enterprises focus on the “what” - what chatbots to build and what tasks bots should perform - instead of the “how.” This means more immediate and measurable business results.

With SmartMessage Bots Platform, you can:

**INCREASE** organizational efficiency and worker productivity by empowering employees to complete routine tasks in less time, with communication tools they know and love

**SIMPLIFY** the process of interacting with complex enterprise systems and minimize the impact of manual, resource-intensive business and supply chain processes

**DRIVE** customer loyalty with right-time reminders, right-time offers, and world-class service across all channels

**IMPROVE** customer service and retention with bots that can anticipate requests and future needs and deliver instant answers in real-time, 24/7

**CREATE** smarter, higher-value purchase and service interactions for your customers

**EXPAND** the reach of your brand by engaging with customers in a consistent and intuitive manner across all touch points

**REDUCE** time and money spent on custom apps and solutions