



GILAWA

WhatsApp Voice AI services with Kamailio and Asterisk

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<https://gilawa.com>

About our RTC services



Real-time Communication

Management, consulting, training and development for real-time communication solutions for global clients



Kamailio Services

Development of new features and product enhancements for Kamailio and VoIP services, since 2007



Open Source

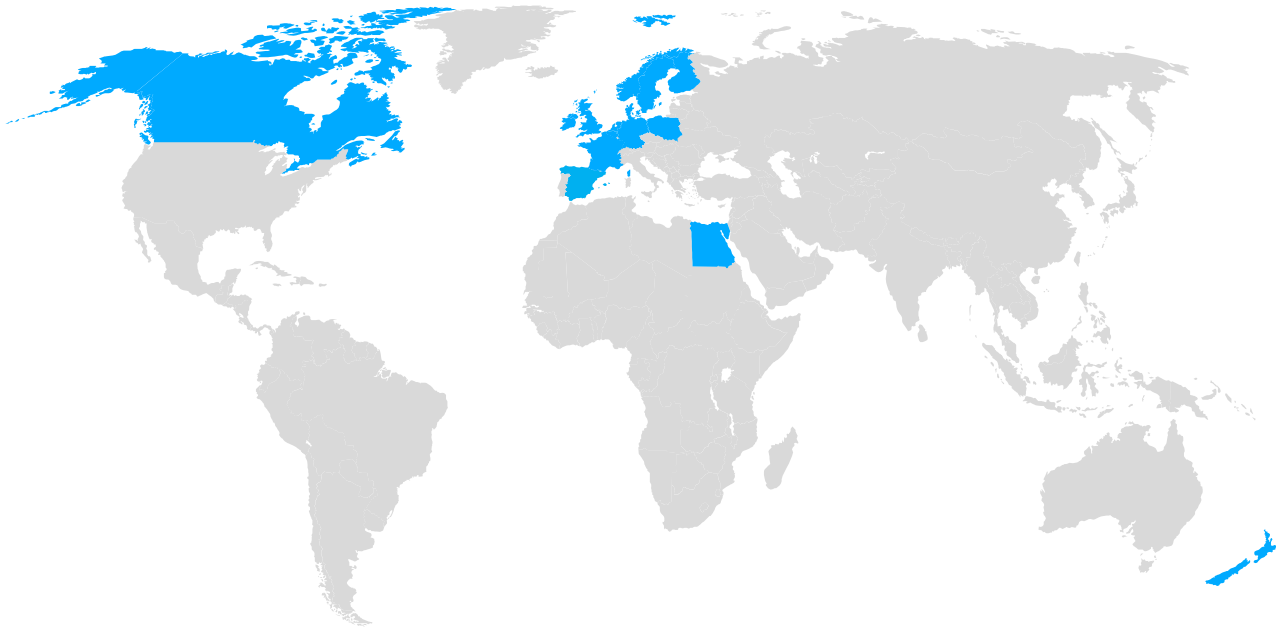
Integration of in-house developments into open-source projects



Technical Consultancy

Consulting and implementing performance optimization, availability and security

Our Clients



Who They Are

Internet Service Providers and Telephone Providers

Where They Are

Germany, Europe, North America, Middle East and Asia

Why They Choose Us



Independent and neutral service provider

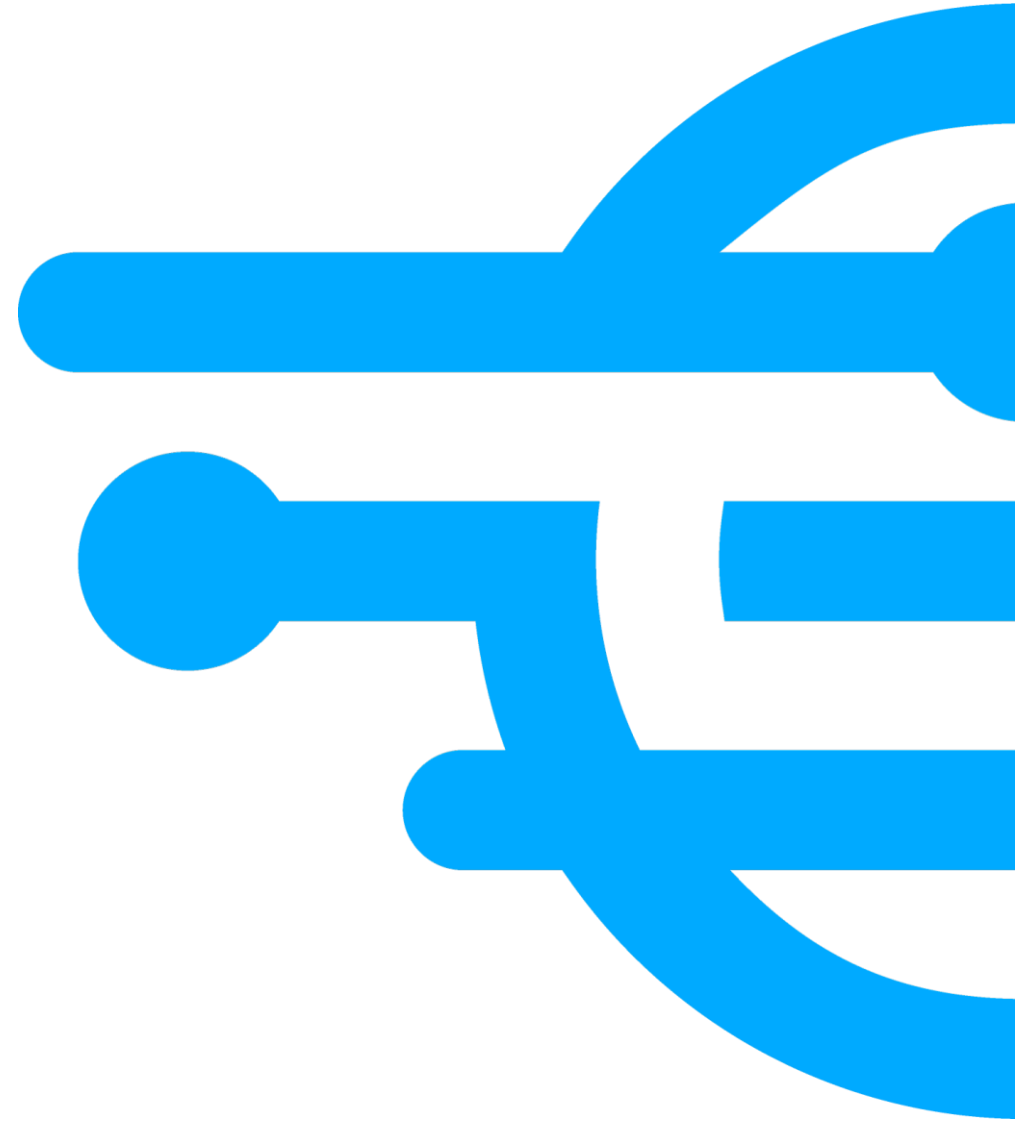
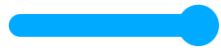


No proprietary products for customers



Flexible, no preferred suppliers

WhatsApp Voice AI services with Kamailio and Asterisk



Agenda

WhatsApp motivation and details

Challenges on the way

Implementation Kamailio and Asterisk

Voice AI services

Current status and demo



General remark



- This was a group effort from our side, thanks to the whole team
- Long WhatsApp delays during implementation, more later about that

Motivation WhatsApp interconnection



Huge userbase, over two billions of devices connected daily



Established communication channel for business purposes



Easy integration into existing VoIP platforms due to SIP standard

Technical details WhatsApp

- Onboarding process with Meta Facebook tools
- Business verification necessary
- Phone number verification necessary
- Own Facebook application provides roles and API key management
- Web based API or SIP interconnection possible
- TLS and SRTP mandatory
- SIP INVITE with authentication
- No REGISTER
- OPUS is the main codec, PCMA/PCMU alternative
- Special call-back rules

Challenges with WhatsApp (1/2)

- Business registration takes some time for the KYC process
- Without paid subscription you get no support, only AI from Meta
- With paid subscription the Meta support is actually ok
- WhatsApp moved their whole support to AI, there seems to be no more humans involved
- During account registration we had a WhatsApp related problem
- It could not be solved despite multiple tickets and escalations
- Handover between Meta and WhatsApp teams not working
- Non-existing support interfaces from WhatsApp, status unknown from Meta

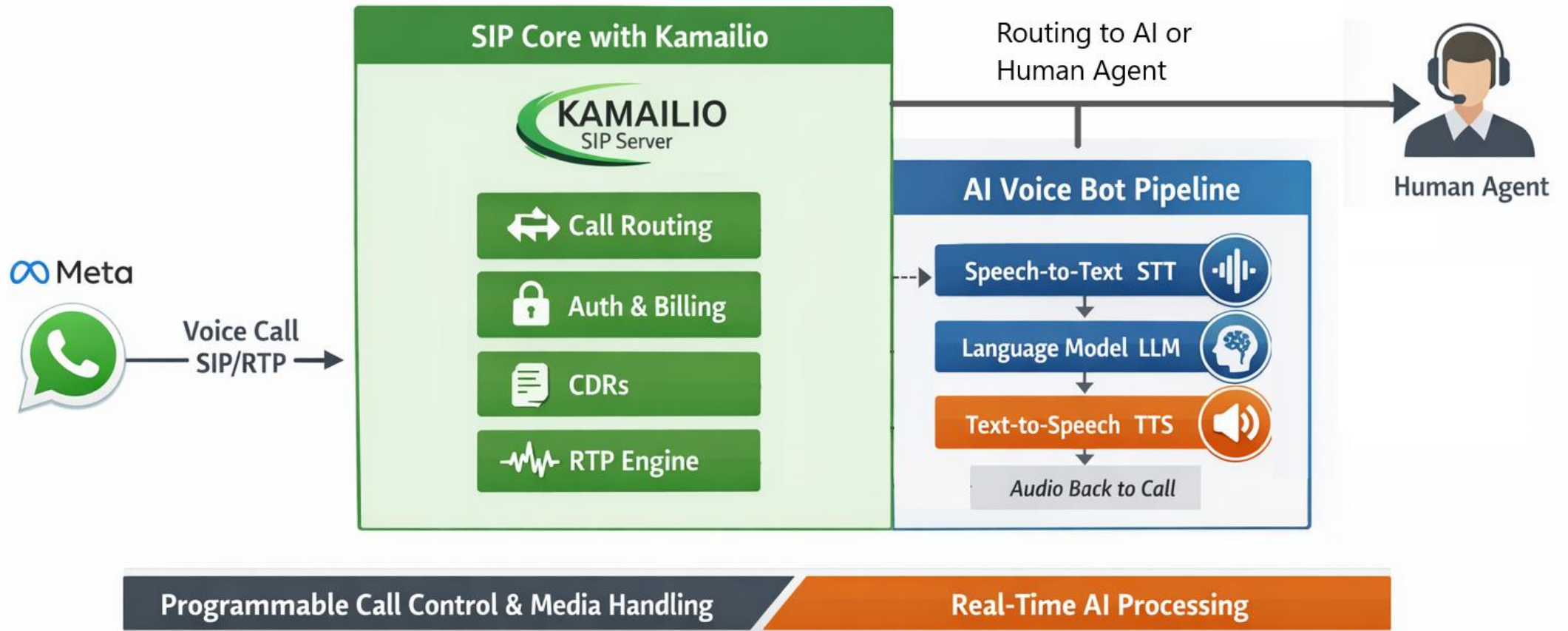
Challenges with WhatsApp (2/2)

- Communication with AI support interface in endless loops
- No human escalation possible
- Inconsistent status between Meta and WhatsApp tools main issue
- In the end we waited over a month, then the problem was fixed or got magically fixed by itself
- Interested in your experiences as well

THE ROAD TO AI HELL



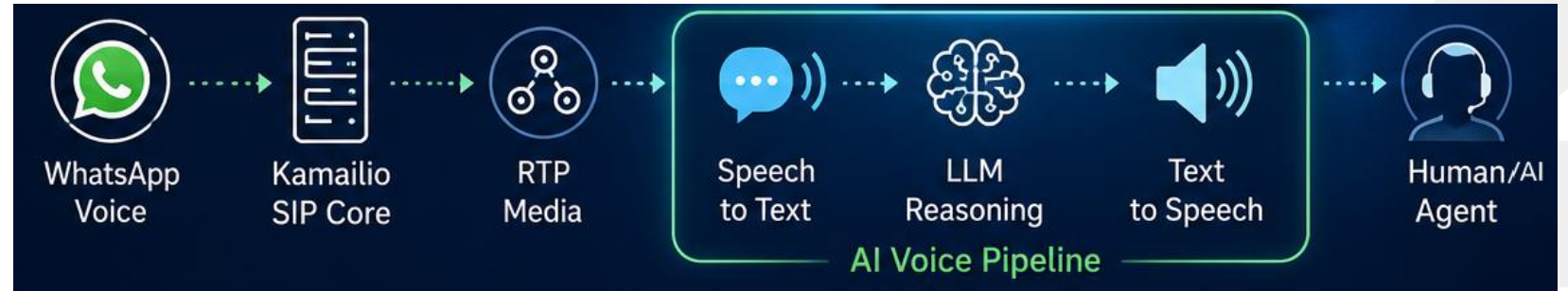
Implementation



Implementation with Kamailio or Asterisk

- Authentication with the uac module or asterisk method
- SHA256 and MD5 hashing algorithm supported from WhatsApp
- Evaluate custom header “X-FB-External-Domain”
- Use TLS for signalisation
- Use SRTP for media with rtpengine or asterisk
- Offer Opus and PCMA/PCMU codecs
- Use Kamailio configuration for routing integration or asterisk dialplan as usual

Voice AI services



- Different services evaluated
- Focus on local LLM model and local TTS/SST for privacy and digital independence, different tests
- Deep dive into root-cause of each nonsense reply by AI!
- Technical challenges:
 - SIP and RTP connection not trivial
 - Networking docker/host issues
 - Security
- Tools integration tested, e.g. weather information
 - LLM got us wrong!
 - Tools conflict
- Turns were normally fine, but barge-in caused confusion for STT
- Hallucination vs. questioning when confused
 - Confused STT or LLM?
- Latency: the smallest problem!

Current status

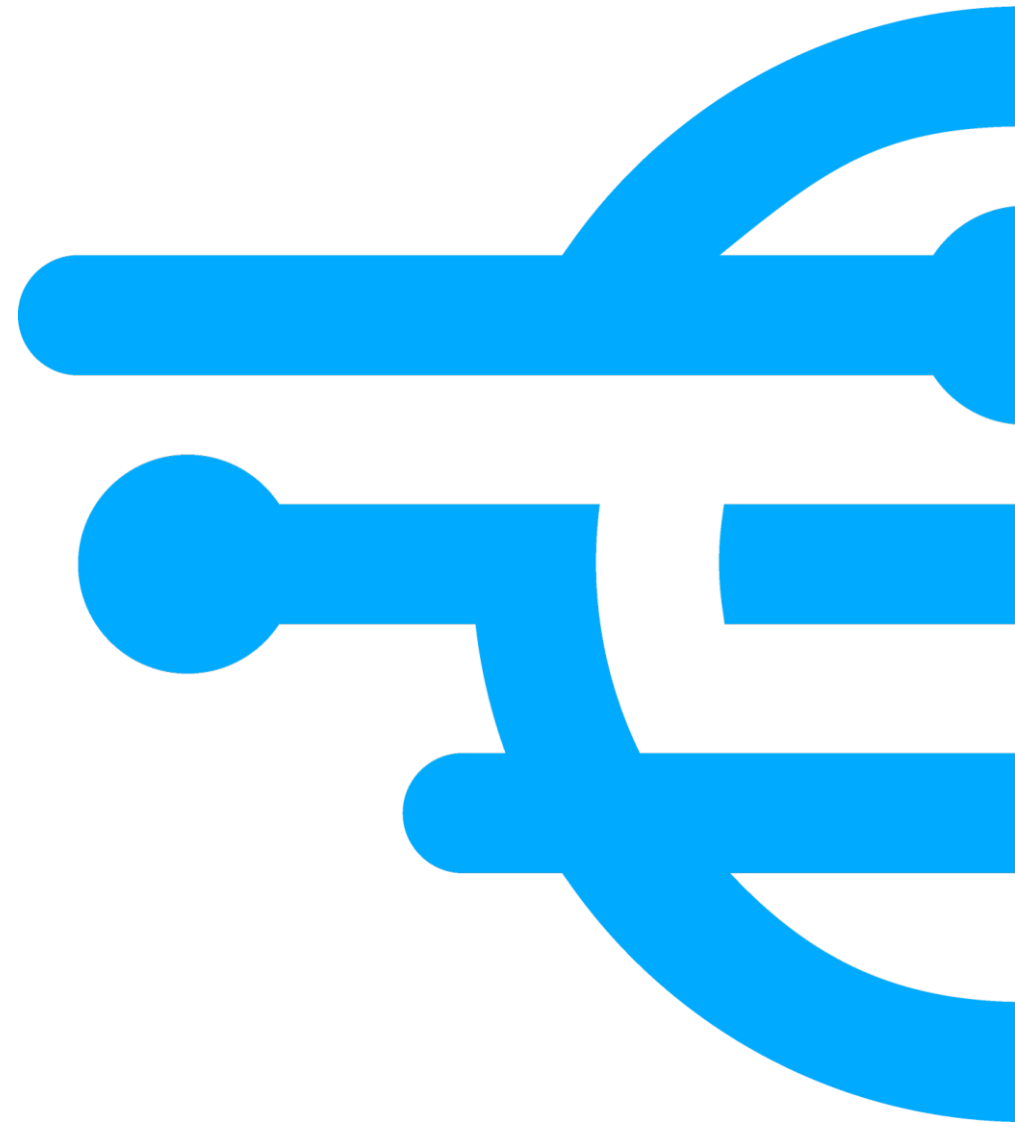
- Onboarding challenges all solved
- WhatsApp calling works
- Interconnection to local Voice AI service works
- **Dangerous demo!**





Thank you!
Questions?

<https://gilawa.com>





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