

LoRa APPLICATIONS



A person is sitting at a desk, viewed from behind. They are wearing a dark t-shirt with a logo on the back. There are two computer monitors on the desk, one on each side of the person. The background shows a window looking out onto a building with a door and some trees. The text "CREATING A LoRa SOLUTION" is overlaid in the center of the image.

CREATING A LoRa SOLUTION

LoRa SOLUTION STRATEGIES

- Target the open source stack, varying could be costly
- Avoid vendor specific stack implementations. This tech is proven but emerging - major providers could come and go
- It's likely that you will want to partner with multiple providers
- Consider having your own solution as an option
- Prepare a back end web service integration layer capable of communicating with multiple network providers



FIRMWARE: MODULES vs CUSTOM

Module	Custom
Fixed firmware release	Fully custom firmware, easy updates to match open source stack
Controlled via AT commands via UART	Lower current stack
Higher current draw	Requires FCC certification
FCC certified	Requires alliance certification
Some alliance compliant	Inexpensive
Expensive	Server can initiate transmission at fixed intervals
Cannot customize transmission beyond LoRa	
Possible vendor breaking code	

LoRa VS SigFox

Sigfox	Custom
Closed ecosystem	Open ecosystem
Constrained message volume size	Bidirectional comm. supported
Optimized for upstream comm.	Multiple network providers, deploy your own
Single network provider	Granular sensor configuration
uniform sensor configurations	Better penetrates buildings
Longer range	10+ year sensor battery life
~90 month sensor battery life	290 bps - 50Kbps data rate
100 bps data rate	



COMPLIANCE TESTING & CERTIFICATION

- Test document details all tests run
- Testing done by a certified test house
- Test house confirms functionality, typically in 2-3 days
- Costs around \$5,000 - 7,000
- If passed you receive a letter that is submitted to the LoRa Alliance
- Product is displayed on the LoRa Alliance Products site

Alliance Authorized Test Houses

- 7layers
- DEKRA Testing and Certification
- Etteplan (formerly Espotel)
- IMST
- TÜV Rheinland



DEVELOPING YOUR OWN NETWORK

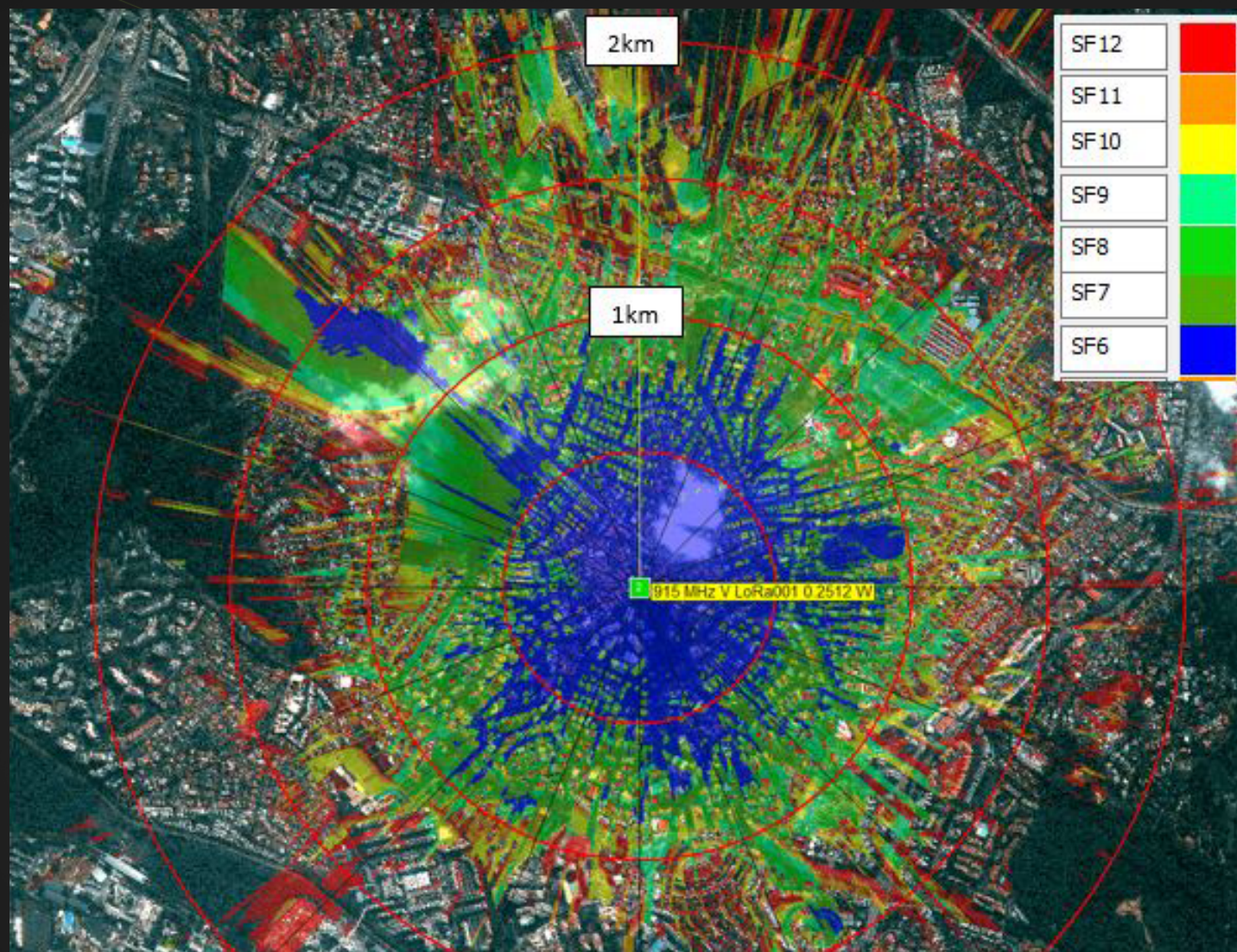
- Common roadblocks when working with network providers is new network deployment struggles. Added cost to you or time to deploy, you will want a self deployed network as an option.
- Having your own network also allows for easy internal testing.
- You can license or buy, companies have varying pricing models.
 - Per device
 - Per gateway
 - Other factors
- Some require purchasing gateways from them, others have instructions for flashing gateways with custom firmware
- Having this option allows for quickly deploying networks wherever and whenever needed.
- Complete network performance control

EXTRACTING & STORING YOUR DATA



- As you will likely end up working with multiple network providers, or possibly having your own solution
- Even network providers typically only hold your data for a fixed period of time of X# of total messages
- You will want a central location for all of your data.
- Most providers offer an API for extracting data out of the Application Server

START FEASIBILITY TEST



*image source: ATDI

- Acquire devices, modules or off the shelf implementation.
- Test in different RF environments, power levels and data rates.

REQUIREMENTS

- (Suggested) Join LoRa Alliance
- Acquire Organizationally Unique Identifier (OUI) from IEEE
 - Example: AC-DE-48-23-04
- Request Extended Unique Identifier (EUI) block from IEEE
 - Each device needs its own globally unique number
- Each device should be programmed with OUI and its EUI

JOINING THE LoRa ALLIANCE

Membership Rights	Sponsor (5k)	Contributors (5k)	Institutions (Free)	Adopter (3k)	Public (Free)
The right request Board of Directors Seat	•				
The right to submit Alliance Deliverables for final approval by the Board of Directors	•				
The right to access Alliance operational data	•				
The right to initiate, participate in, vote and chair Committees	•				
The right to initiate, participate in, vote and chair Work Groups	•	•			
The right to contribute to Draft Deliverables and access Final Deliverables	•	•	•		
The right to participation in press articles & interviews	•	•	•		
The right to have certified Compliant Products	•	•	•		
The right to use Alliance and/or Certification Logo on certified products	•	•	•	•	
The right to access members only website	•	•	•	•	
The right to participate in general or annual meetings	•	•	•	•	
The right to receive Alliance communications	•	•	•	•	
Access to Final Deliverables	•	•	•	•	
Access to Released Deliverables	•	•	•	•	•



THANK YOU!