Jumping Jack Simplex CX Framework
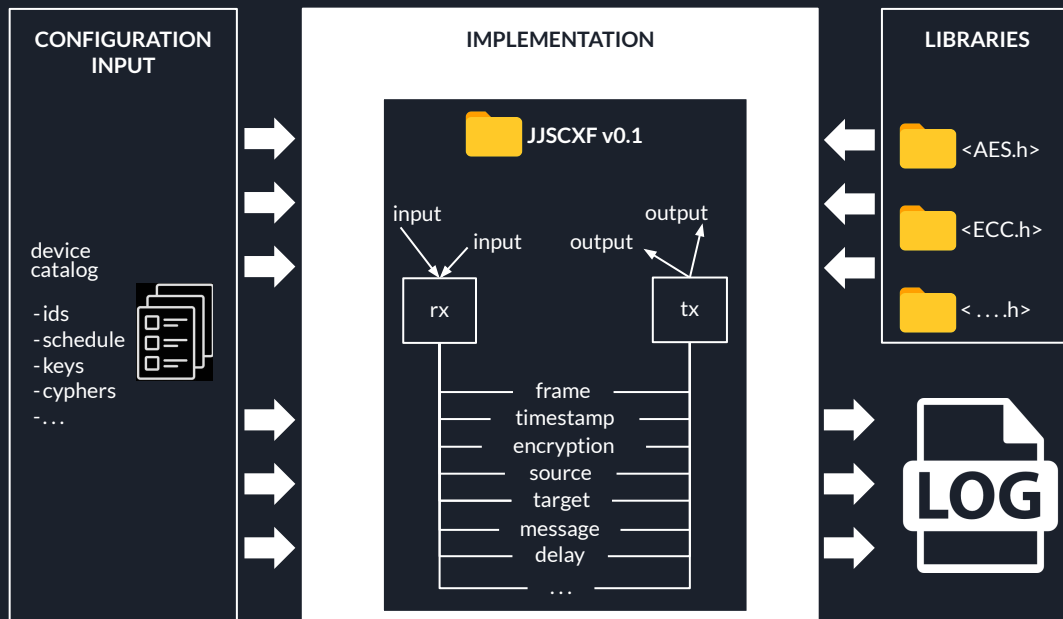
Work in progress proposal
JJSCXF v0.1

Cristian Amayo
July 2025
Lima - Peru, London - UK

Table of Contents

- Features and resources

- Dev Envs

- Device runtime

- Topology:

    - P2P vs Controller

    - Grid

    - Cluster

- Transmission

    - Non-scheduled

    - Scheduled

- In-revision

    - additional configuration: amplitude, frequency, band

Features & Resources

- Simplex signal
- Interchangeable TX/RX roles
- Self-aleatory configuration (schedule, encryption, messaging, protocol, frame)
- Non standard custom broadcast
- uniqueness broadcast
- Single/multi part messaging
- Hard/soft coding
- Star-P2P / CS-controller approaches
- Full TX/RX registry

CONFIGURATION INPUT

device catalog

- ids
- schedule
- keys
- cyphers
- . . .

IMPLEMENTATION

JJSCXF v0.1

input
input
rx

output
output
tx

frame
timestamp
encryption
source
target
message
delay
. . .

LIBRARIES

<AES.h>
<ECC.h>
< . . .h>

LOG

Dev Envs

DISTRIBUTED

HashiCorp Vault → IMPLEMENTATION 📁 JJSCXF v0.1 ← JFrog Artifactory, GitHub, Bitbucket / aws, Azure, Google Cloud Platform

PROS Always updated libraries, self-management, 24x7, contingency responses, on-demand costs

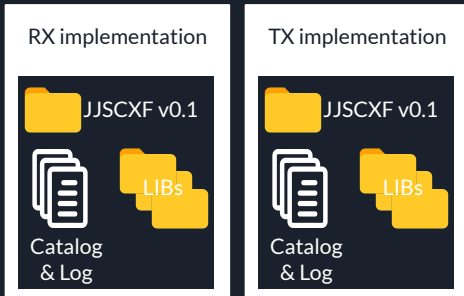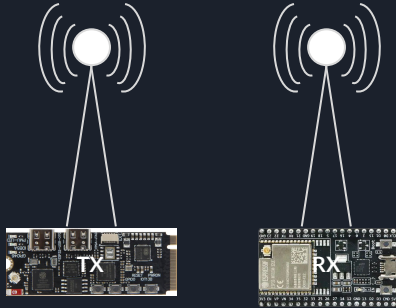**CONS** exposure, dependent running, partial control, contractual terms, remote allocation
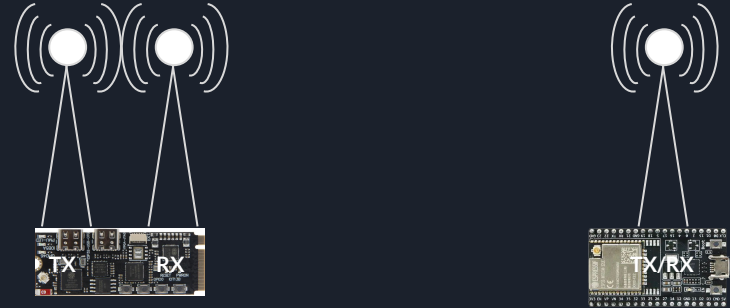
CENTRAL

→ IMPLEMENTATION 📁 JJSCXF v0.1 ←

PROS full confidentiality, independent running, full control, own terms, 24x7, contingency responses

CONS maintenance workload, on-hands management, knowledge acquisition, cost wasting

Device Runtime

Single-role

TX

RX

RX implementation

📁 JJSCXF v0.1

📁 LIBs

📄 Catalog & Log

TX implementation

📁 JJSCXF v0.1

📁 LIBs

📄 Catalog & Log

Multi-role

TX   **RX**

TX implementation

RX implementation

📁 JJSCXF v0.1

📁 LIBs

📄 Catalog & Log

TX/RX

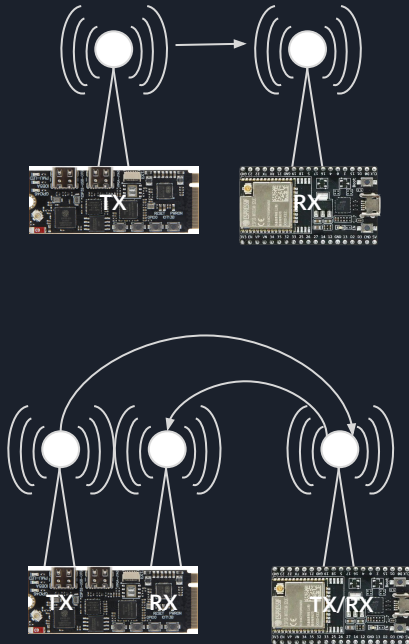TX implementation

RX implementation

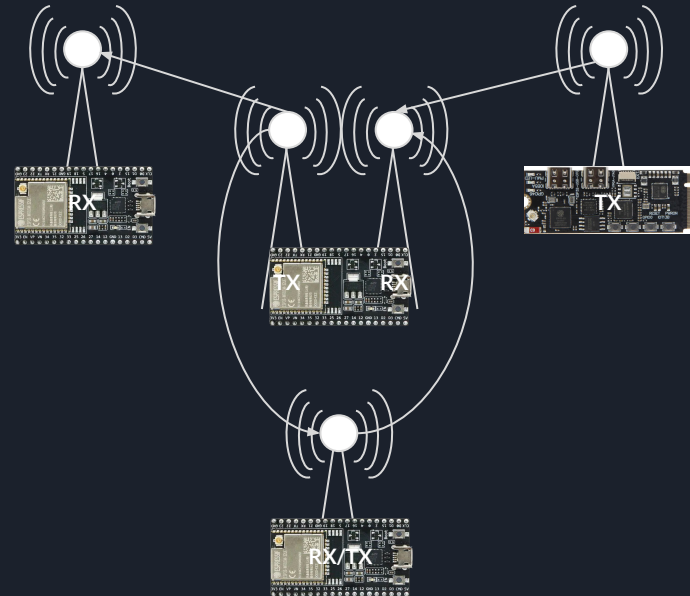📁 JJSCXF v0.1
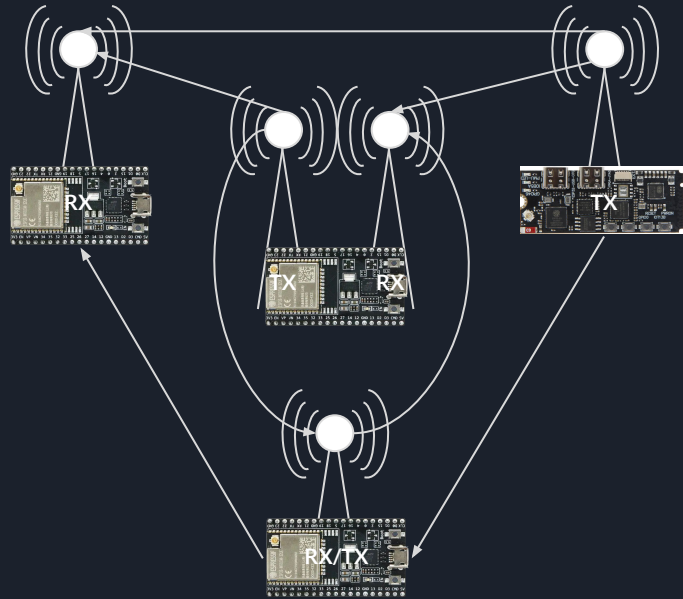
📁 LIBs

📄 Catalog & Log

Topology: P2P vs Controller

P2P

Controller

Topology: Grid
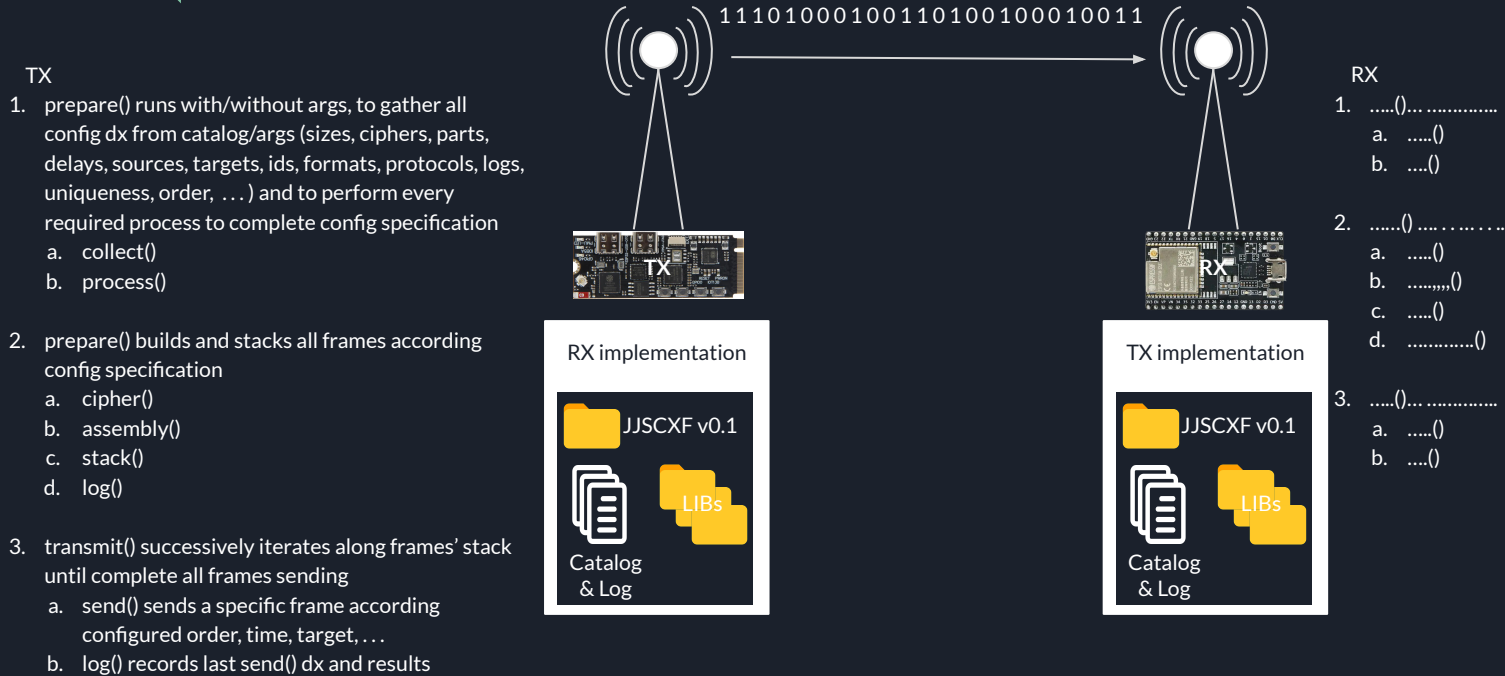
Topology: Cluster

Transmission: non-scheduled

1 1 1 0 1 0 0 0 1 0 0 1 1 0 1 0 0 1 0 0 0 1 0 0 1 1

TX

1. prepare() runs with/without args, to gather all config dx from catalog/args (sizes, ciphers, parts, delays, sources, targets, ids, formats, protocols, logs, uniqueness, order, …) and to perform every required process to complete config specification
   a. collect()
   b. process()

2. prepare() builds and stacks all frames according config specification
   a. cipher()
   b. assembly()
   c. stack()
   d. log()

3. transmit() successively iterates along frames' stack until complete all frames sending
   a. send() sends a specific frame according configured order, time, target, …
   b. log() records last send() dx and results

TX

RX

RX implementation

📁 JJSCXF v0.1

📄 📁 LIBs

Catalog & Log

TX implementation

📁 JJSCXF v0.1

📄 📁 LIBs

Catalog & Log

RX

1. …..()… …………..
   a. …..()
   b. ….()

2. ……() …. . … . ..
   a. …..()
   b. …..,,,()
   c. …..()
   d. …………()

3. …..()… …………..
   a. …..()
   b. ….()

Transmission: scheduled

TX

1. .....().... ....
   a. .....()
   b. ....()

2. ......() ....
   a. .....()
   b. .....,,,,()
   c. .....()
   d. ....()

3. .....().... ....
   a. .....()
   b. ....()

1110100010011010010001 0011

RX

1. .....().... ....
   a. .....()
   b. ....()

2. ......() ....
   a. .....()
   b. .....,,,,()
   c. .....()
   d. ....()

3. .....().... ....
   a. .....()
   b. ....()

TX

RX

RX implementation

JJSCXF v0.1

LIBs

Catalog & Log

TX implementation

JJSCXF v0.1

LIBs

Catalog & Log
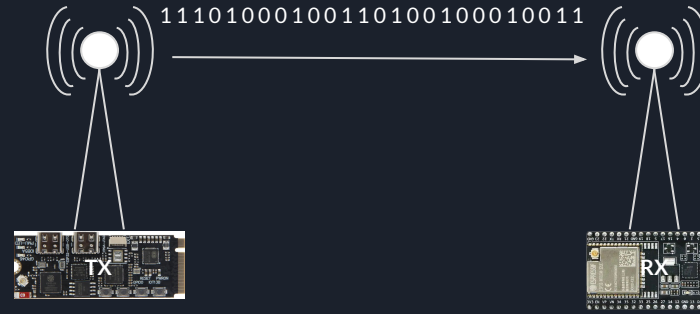
In-revision: amplitude, frequency, band