

Wireless connectivity solution for Brownfield WiBro

GOAL

Assess the feasibility and estimate the costs of connecting existing machines in a brownfield factory floor.

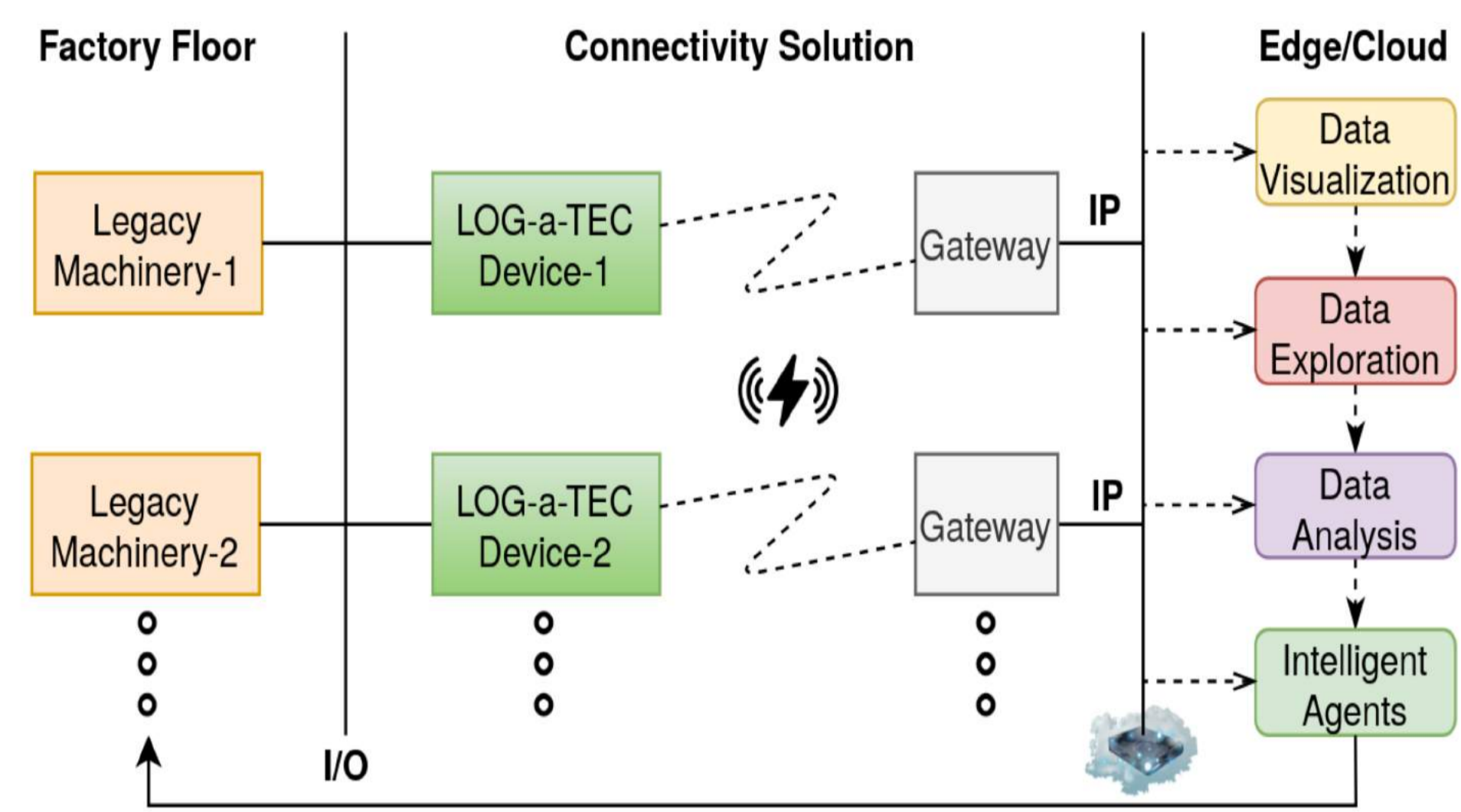
Objectives:

- Efficiently retrofit WiFi capability into legacy assets/machinery
- Estimate the capital and operational costs of such a solution

EXPERIMENT SETUP

Set up 2 access points and 10 different node positions in a brownfield factory to measure connectivity parameters.

2-3 hours to set up 12 devices.



RESULTS

Results for connection feasibility test

- Good transmission rate, zero packet loss, low jitter
- Good link quality with some minor parameter variations

| | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Tx Rate [Mbps] | 1.04 | 1.04 | 1.04 | 1.04 | 1.04 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 |
| Jitter [ms] | 6.829 | 6.939 | 6.092 | 6.716 | 6.608 | 4.506 | 3.372 | 2.298 | 4.086 | 2.2 |
| Packet loss [%] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Figure 3. Tx Rate, jitter and packet loss ratio measurements for ten locations/production lines.

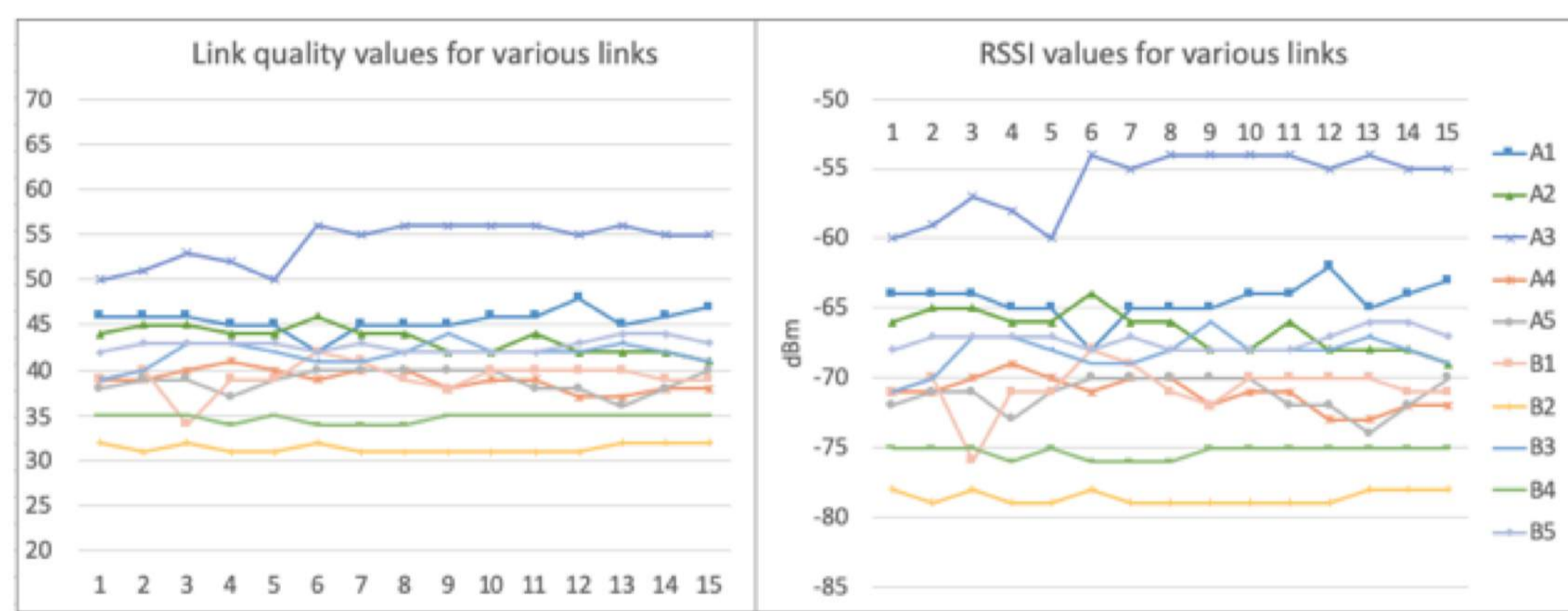


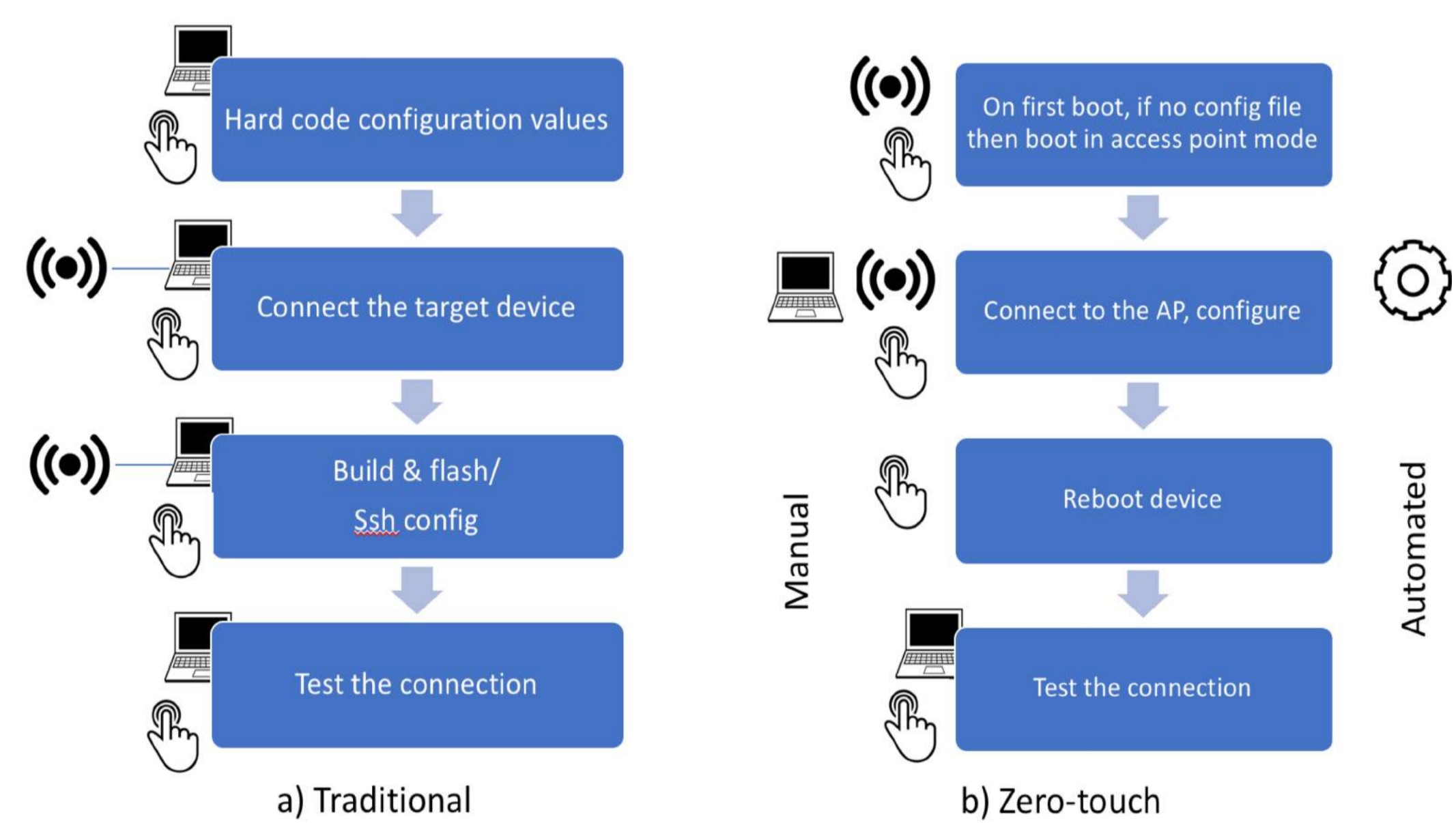
Figure 4. Link quality indicator and RSSI measurements.

Benefits of zero-touch automation

Initial deployment and configuration can be time consuming and error prone.

Zero-touch provisioning reduces the time, but increased automation is needed for deploying larger number of devices.

- Potential to cut down to by 4x to 30 mins?



CONCLUSIONS

Connectivity is feasible according to performance measurements.

Increased deployment automation for a cost-effective commercial solutions.

Assessment of improvement in operational efficiency using DevOps tools requires longer running experiments.

POST MORTEM

