

From equipment signals to maintenance action.

A design case study based on the Industrial IoT and CPSSmart profile: monitoring measurement points, verifying alerts, assigning maintenance and closing the loop.

Industrial IoT · Plant Operations

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Evidence status

IoT/CPSSmart capability documentation exists; the dashboards, assistant and apps in this kit are design prototypes not connected to real equipment.

Sample UIs use synthetic data. Existing DocAgent screenshots have record/partner/figure data redacted. No real customer or employee results are used for illustration.

Collect

Log timestamp, equipment, measurement point and signal quality.

Verify

Operations receives the alert and checks data reliability.

Assign

Create an inspection request for the right technician.

Maintain

Record the checklist, on-site result and evidence of work.

Close the loop

The manager checks the result before closing the alert.

See where the work gets done.

... Case study / CTC Smart Tech

Plant Operations

Role-based business workspace.

System overview

Operator

Maintenance technician

Plant manager

Business assistant

PROPOSED PROTOTYPE

Synthetic data, no real customer or employee information.

Not connected to production systems.

CTC Plant Operations

PROTOTYPE

SOURCED WORK - PEOPLE DECIDE

From equipment signals to maintenance action.

Industrial IoT - Plant Operations

03

Illustrative measurement points

01

Alert to verify

00

Equipment control commands

Work queue

Synthetic data

Equipment	Measurement point	Sample signal	Status
DEMO-PUMP-01	Temperature	78 °C / sample threshold 75 °C	Awaiting confirmation
DEMO-MOTOR-02	Connection state	Illustrative data ready	Monitoring
DEMO-METER-03	Power	Metering cycle to reconcile	Monitoring

Open sample record ...

Flow by role

1 Operator

Review alerts and measurement-point quality.

2 Maintenance technician

Receive the assigned work order.

3 Plant manager

Track handling status and owners.

Decisions have an owner

No real sensor connection, no machine-operation instructions, no PLC/SCADA writes.

Sources & versions

SENSOR-DEMO v1

Simulated point: 78 °C with an illustrative 75 °C threshold. Not a recommended threshold for real equipment.

WORK-DEMO v1

Sample work order: on-site verification follows the plant-approved maintenance procedure.

POLICY-DEMO-OT

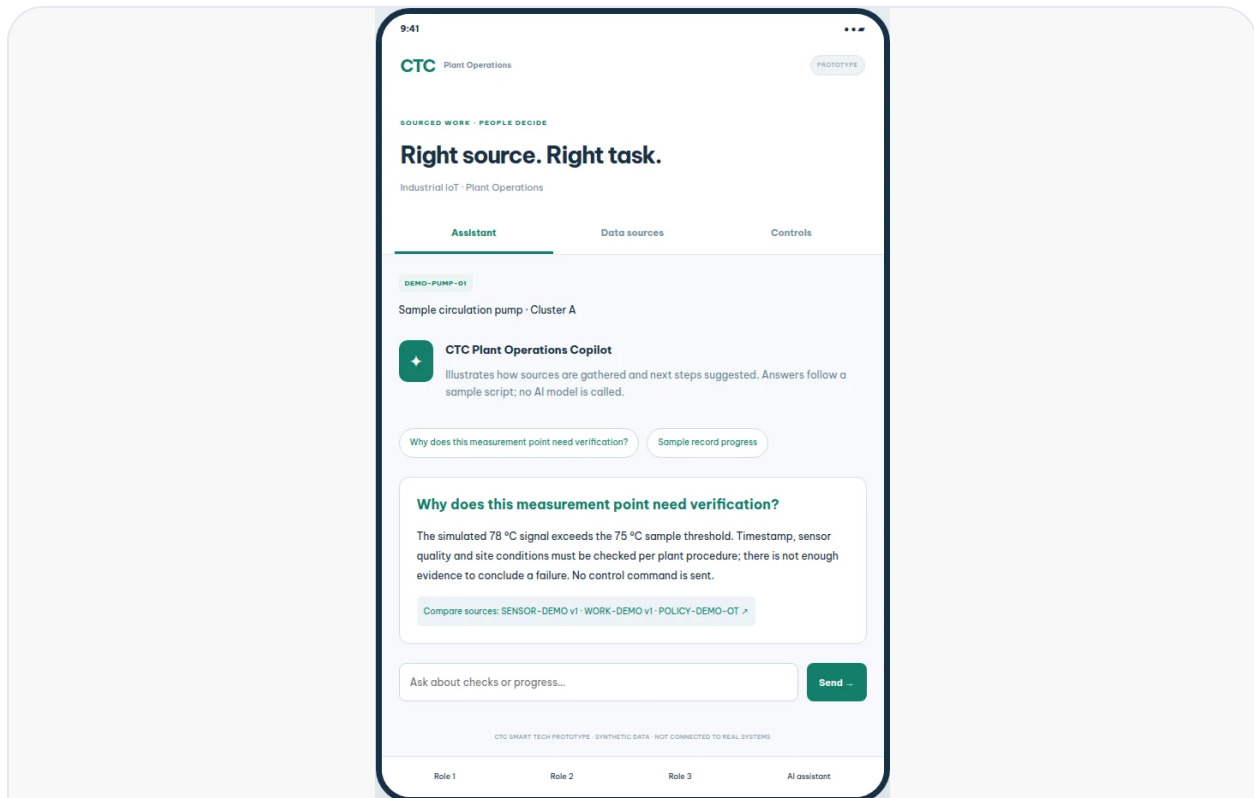
The prototype only tracks state; no PLC/SCADA connection and no control commands.

Prototype session log

Proposed prototype

Plant Operations workspace

Prototype dashboard with simulated records; states and process follow the solution design.



Proposed prototype

Plant Operations assistant

Why does this measurement point need verification? Sourced simulated scenario; no LLM call.

02 / ROLE-BASED APPS

Every role has a clear workflow.

The apps focus on frequent tasks. In production they share the APIs, file codes, permission policy and history of the business platform.

SHIFT & ALERTS

Operator

- Review alerts and measurement-point quality.
- Acknowledge receipt during the shift.
- Forward the inspection request to maintenance.

[Record-handling screen ↗](#)

FIELD WORK

Maintenance technician

- Receive the assigned work order.
- Confirm the inspection per the on-site procedure.
- Record the result and hand over for manager review.

[Record-handling screen ↗](#)

RISK & RESOURCES

Plant manager

- Track handling status and owners.
- Check maintenance results before closing an alert.
- Summarise causes and improvements.

[Record-handling screen ↗](#)

Module mapping & permission limits

ROLE	MODULE	SCOPE
Operator	Monitoring → Alerts → Maintenance request	Acknowledges and reports state; cannot change thresholds or control machines.
Maintenance technician	Work order → Checklist → Inspection result	Assigned work only. Cannot close alerts before approval.

ROLE	MODULE	SCOPE
Plant manager	Dashboard → Maintenance → Close approval → Audit log	Approves state within scope; OT control changes need a separate procedure.

03 / A PROTOTYPE FLOW YOU CAN TRY

From input to an evidence-based decision.

01 Awaiting confirmation

02 Awaiting maintenance

03 Awaiting close approval

04 Sample alert closed

The first role completes the checklist and submits evidence; the next role records an evidence-based result; the approver confirms or returns with a reason. The sample session logs every step.

Prototype boundary

No real sensor connection, no machine-operation instructions, no PLC/SCADA writes.

Sample state is stored in the same browser, separated per solution. There is no authentication, multi-user backend, cross-device sync, push or LLM connection. Those must be built and accepted before real operation.

Sources to compare, not automatic conclusions.

SENSOR-DEMO v1

Simulated point: 78 °C with an illustrative 75 °C threshold. Not a recommended threshold for real equipment.

WORK-DEMO v1

Sample work order; on-site verification follows the plant-approved maintenance procedure.

POLICY-DEMO-OT

The prototype only tracks state; no PLC/SCADA connection and no control commands.

The simulated 78 °C signal exceeds the 75 °C sample threshold. Timestamp, sensor quality and site conditions must be checked per plant procedure; there is not enough evidence to conclude a failure. No control command is sent.

DEMO sources are synthetic data for simulation. Real business documents must be collected with usage rights, versioned and quality-checked.

Pilot & acceptance roadmap

1. Survey measurement points, protocols and the OT/IT boundary.
2. Connect read-only; check timestamps, missing data and buffering.
3. Run trial alerts; cross-check with operations/maintenance.
4. Accept the confirm-handle-close loop and recovery capability.

Conditions to verify

- Alerts store source, time and measurement-point quality.
- No closing without an inspection result.
- Delayed / disconnected data shows the correct state.
- The monitoring flow never generates control commands.

Agree scope, baseline, sample size, confirming person and operating responsibility before the pilot. Demos do not replace acceptance results or performance commitments.

Reference direction: CTC Smart Tech Industrial IoT & CPSSmart capability profile. Details are compiled from existing documents and source code; new UIs are clearly marked as proposed designs.