GrainCore Example

The project covers the full lifecycle of an industrial solution: data acquisition, alarming, historical logging, scripting, visualization, security, and deployment.

How-to **Examples** **Industry** GrainCore Example

Updated: April 2026 | **FrameworX:** fx-2020.1.4b+

> **Download**
>
> GrainCore.dbsln
> No hardware required — uses ValueSimulator to generate all process data.

> **About this project**
>
> This project was developed to demonstrate basic functionalities of the FrameworX SCADA platform by Tatsoft. It is the result of a hands-on fundamentals training and is not intended as a production solution.

Project Overview

GrainCore is a simulated SCADA solution built on FrameworX representing a small grain storage facility.

What the Project Does

Data Foundation

The solution models a grain silo station with a structured **Unified Namespace (UNS)** tag hierarchy following the ISA-95 pattern (**Enterprise / Site / Equipment / Tag**). Data is fed by a **ValueSimulator** device — a built-in FrameworX protocol that generates realistic simulated values without requiring physical hardware.

Monitored equipment and tags:

Equipment	Tags
Silo01	Level (%), Temperature (°C), Moisture (%)
AerationFan01	Running (digital), Speed (RPM), MotorCurrent (A)

A basic operator display (**SiloStation_Overview**) shows all live tag values updating in real time.

Alarms, Historian & Scripting

The solution adds operational intelligence on top of the data layer:

- **Alarms** — condition-based alerts on silo temperature, moisture, level, and fan motor current, grouped and configured with acknowledgment requirements.
- **Historian** — tag values are logged to a SQLite-based historian table (**SiloStation_Log**) for audit and trending purposes.
- **Server Script (C#)** — a calculated tag (**AerationFan01/Efficiency = Speed / MotorCurrent**) is computed every 2 seconds via a scheduled C# server task, written back into the UNS.
- **TrendChart** — the operator display is extended with a live trend showing Temperature, Moisture, and Efficiency over time.

Displays, Dynamics, Security & Deployment

The solution is finalized as a production-ready HMI:

- **Animated operator display** — the silo rectangle fills proportionally to grain level, the fan indicator changes color based on running state, and a temperature warning label appears conditionally.
- **Display navigation** — a multi-screen layout with a Home screen, SiloStation_Overview, and an Alarms_Overview display, all interconnected via buttons.

- **Deployment** — the solution runs in WPF and in a web browser.

Solution Summary

FrameworX Pillar	What Was Built
1 – Data Foundation	UNS tag hierarchy (ISA-95), 6 process tags + 1 calculated tag, ValueSimulator device
2 – Industrial Operations	Alarm groups with acknowledgment, SQLite historian logging
3 – Business Operations	C# server script for Efficiency calculation, TrendChart with 3 pens
4 – User Interaction	Animated HMI displays, display navigation, role-based security, browser deployment

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