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ErgoTech Systems, Inc.

ErgoTech IOT Solutions

Using MIStudio and ErgoTech's Technology to
Create Industrial IOT Solutions.



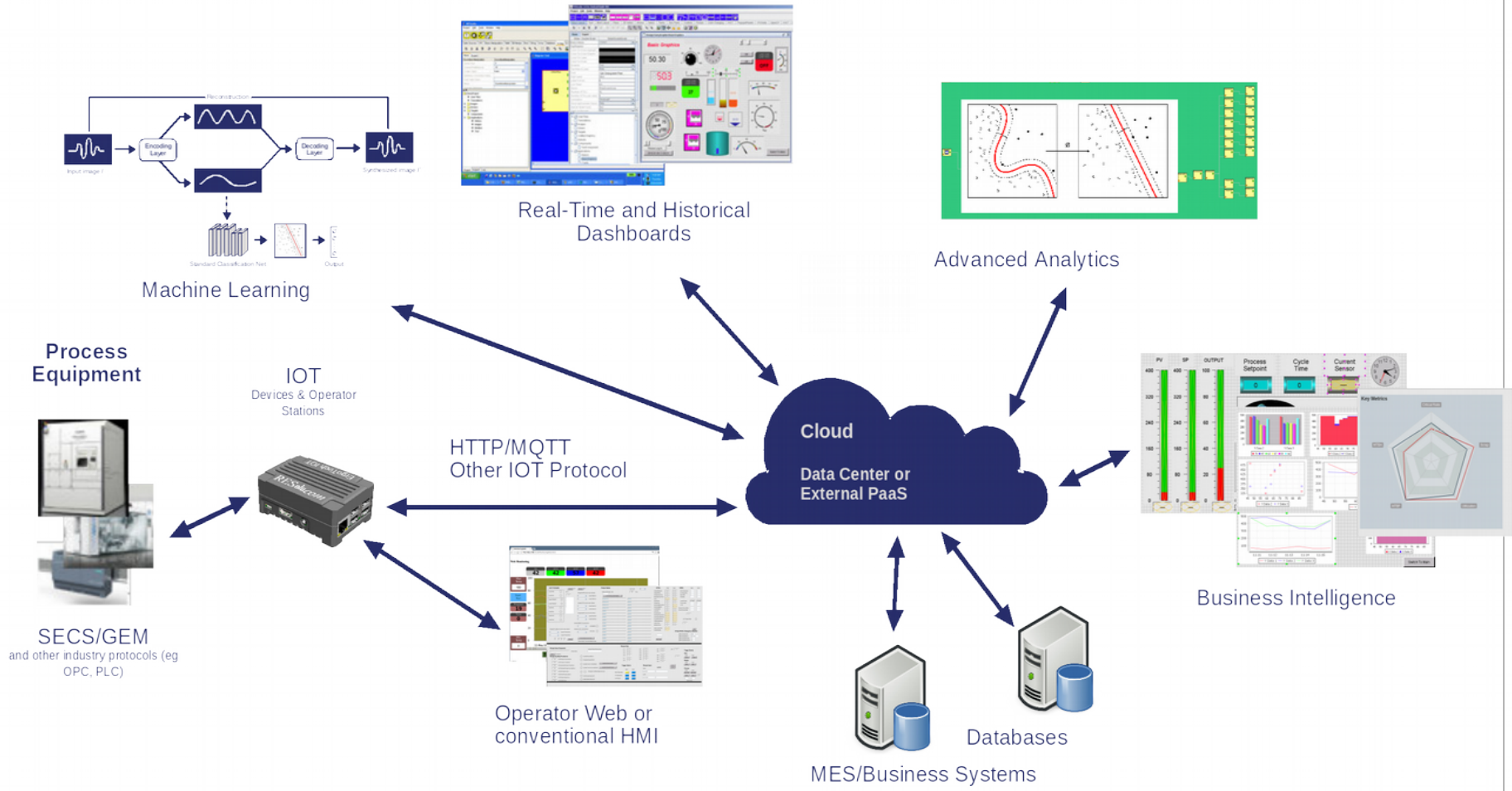
ErgoTech's IOT Vision

- Flexible, extensible toolset to support IOT in manufacturing.
- Wide support for different industries – PLCs, IEC61850, OPC, SECS/GEM, etc.
- Support for web technologies and mobile devices.
- IOT Protocol Support – MQTT, REST, etc.



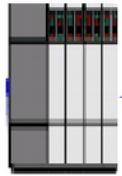
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MISstudio and MIX Scalable Architecture

Equipment

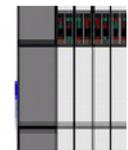
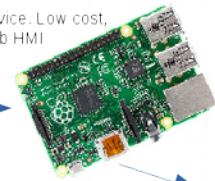


Factory Automation Protocol

PLC: Modbus, Siemens, Mitsubishi, Omron, Rockwell, Semiconductor: SECS/GEM, Building Automation: BACnet, etc.



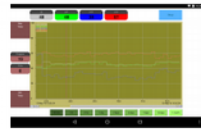
IOT Device, Low cost, with web HMI



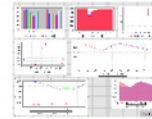
Industrial PC/Solution Robust, extended Temperature 24V



Android Tablet/Phone Low cost, touchscreen Use as HMI or just a diagnostic display.



Web Views



Mobile



IOT Protocol MQTT, REST, etc.



Internet or Intranet

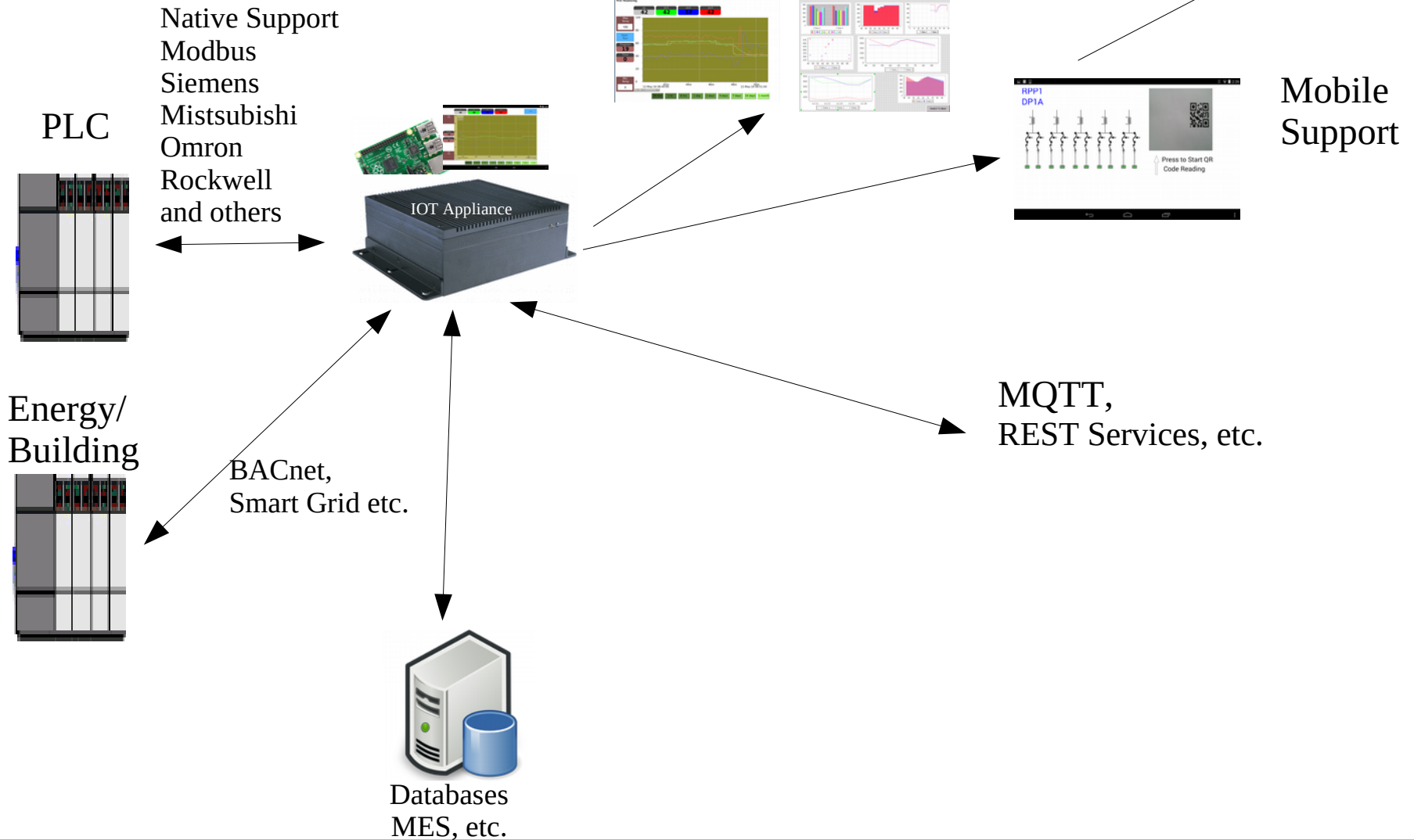
Your internal server or Google, Amazon, etc. Cloud

Databases MES, etc.



MISstudio provides solutions at every level.

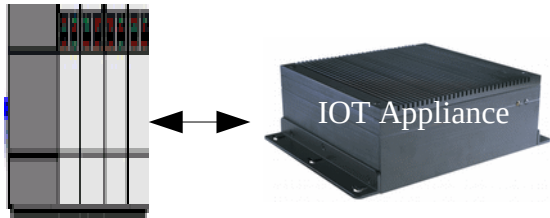
PLC Architecture



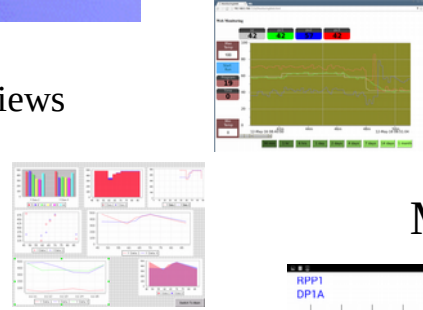
Mobile has potential to be more than just web-views. ErgoTech integrates sensors and the camera for a full IOT experience.

Scalable Architecture

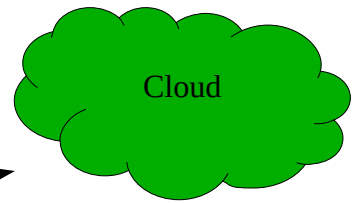
Automation



Web Views



Mobile



Databases MES



Introducing MIStudio

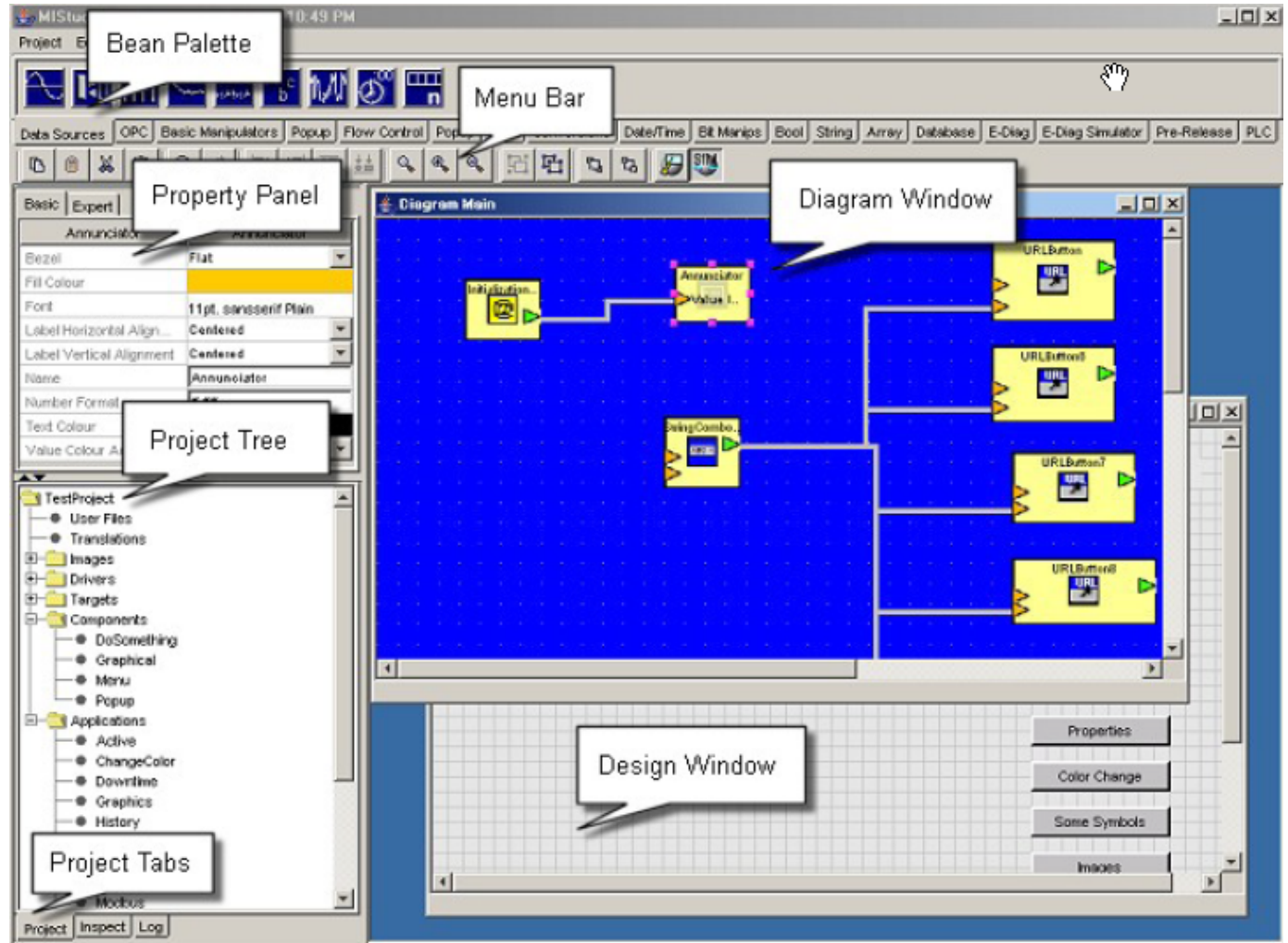
ErgoTech's Manufacturing
Intelligence and Productivity
Solution Software from



“An open standards, platform and
device independent productivity
solution”

MIStudio - Integrated Development Environment

- A graphical tool used to design, create, and deploy Manufacturing Intelligence applications





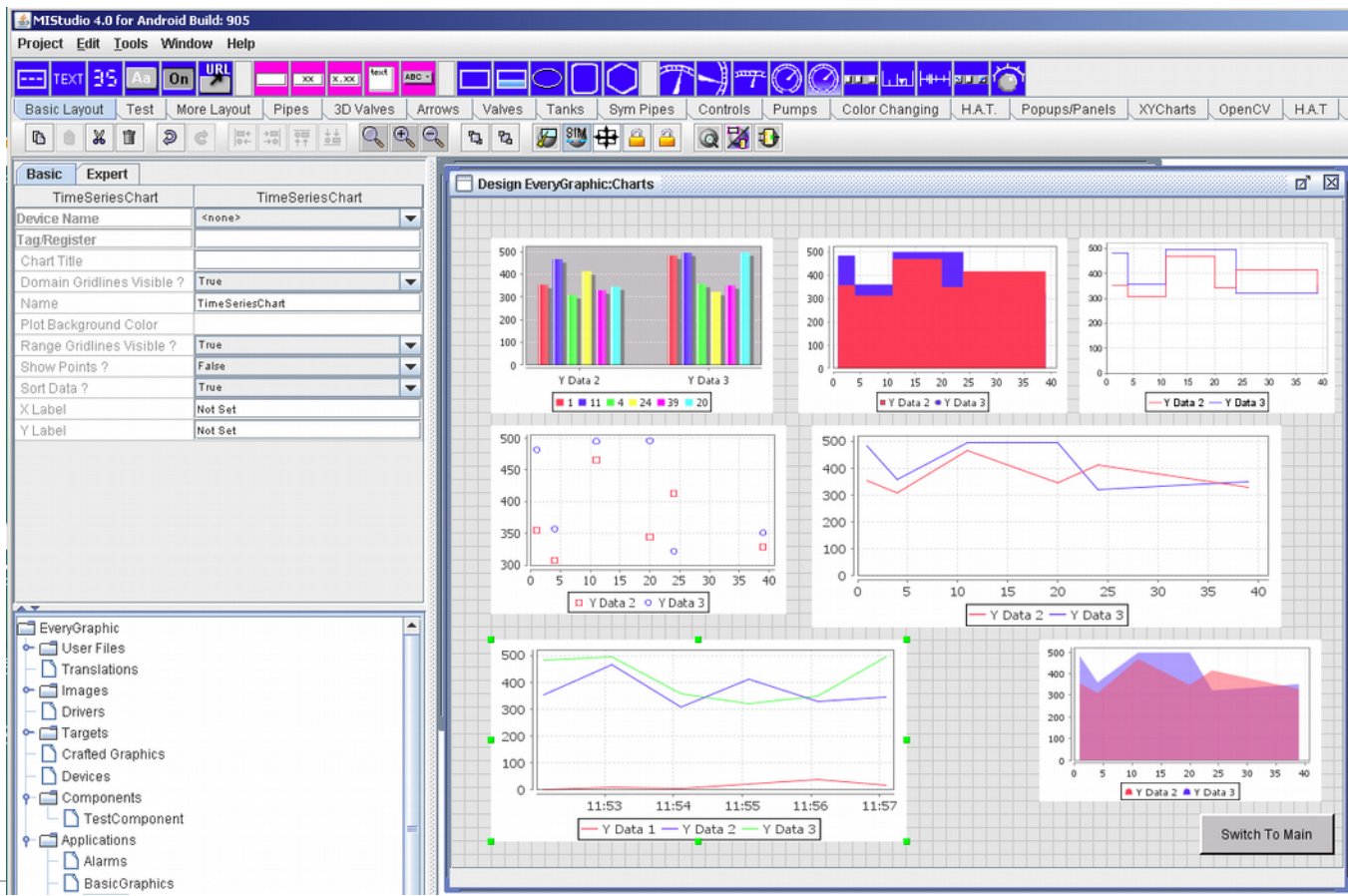
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MIStudio – Product Overview

- 1. Integrated Design Environment, IDE, Software Toolkit
 - Create Real-Time, Web-enabled Manufacturing Intelligence applications
 - Targeted at Engineers, not just Programmers
- 2. Component Library
 - 300 + Visual and Logic Components
 - Charting
 - SPC, Fault Tracking, Database, etc.
- 3. Runtime Execution Engine - MIX Application Server
 - Can be embedded in application Server
 - Browser (HTML5) views. Mobile/

MI Studio IDE - Design (Graphic) Window

This is where you design the graphical user interface for the application. This will become the web-view.



The screenshot displays the MI Studio IDE interface. The top menu bar includes Project, Edit, Tools, Window, and Help. Below it is a toolbar with various icons for text, layout, and simulation. The main workspace is titled "Design EveryGraphic:Charts" and contains several chart types:

- Bar Chart:** A grouped bar chart with two groups labeled "Y Data 2" and "Y Data 3". The legend shows six data series: 1 (red), 11 (blue), 4 (green), 24 (yellow), 39 (purple), and 20 (cyan).
- Area Chart:** A stacked area chart with two series: Y Data 2 (red) and Y Data 3 (blue).
- Step Chart:** A step function chart with two series: Y Data 2 (red) and Y Data 3 (blue).
- Scatter Plot:** A scatter plot with two series: Y Data 2 (red squares) and Y Data 3 (blue circles).
- Line Chart:** A line chart with two series: Y Data 2 (red) and Y Data 3 (blue).
- Area Chart (3 Series):** A stacked area chart with three series: Y Data 1 (red), Y Data 2 (blue), and Y Data 3 (green).
- Line Chart (3 Series):** A line chart with three series: Y Data 1 (red), Y Data 2 (blue), and Y Data 3 (green).

On the left side, there is a "Basic" tab with a "TimeSeriesChart" property panel. The properties include:

- Device Name: <none>
- Tag Register: <empty>
- Chart Title: <empty>
- Domain Gridlines Visible?: True
- Name: TimeSeriesChart
- Plot Background Color: <empty>
- Range Gridlines Visible?: True
- Show Points?: False
- Sort Data?: True
- X Label: Not Set
- Y Label: Not Set

At the bottom left, there is a tree view showing the project structure under "EveryGraphic", including folders for User Files, Translations, Images, Drivers, Targets, Crafted Graphics, Devices, Components, TestComponent, Applications, Alarms, and BasicGraphics.

A "Switch To Main" button is located at the bottom right of the chart area.



MI Studio IDE - Design (Graphic) Window

Provides a wide selection of display components

The image displays several screenshots of the MI Studio IDE interface, illustrating its design capabilities. The main window shows a project titled "Design EveryGraphic:Charts" with a toolbar and a "Basic" tab. The design area contains several charts: a bar chart with multiple series, a pie chart, a scatter plot, and a line graph. A "Design EveryGraphic:Charts" panel is visible, showing properties for the selected chart. A "Design EveryGraphic:SwingOrAptics" panel is also shown, featuring a "Swing Variety" window with a list of items and a "password" field. A "Design MicroprocessTechSRD/Main" panel is shown at the bottom right, displaying a control panel with "ALARMS" (Bowling Temperature, N2 Temperature, Motor RPM, Resistivity Value) and "EVENTS" (Upper Recipe Name, Lower Recipe Name, Upper Door Open, Lower Door Open). The interface includes a "Project Edit Tools Window Help" menu and a "Basic Expert" tab.



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MI Studio IDE - Diagram (Logic) Window

Each Web View has a Diagram Window where components are wired together to create the desired logic execution and display

The screenshot displays the MI Studio IDE interface. The main window is titled "Diagram EveryGraphic:Charts" and shows a logic diagram with several components connected by green lines. The components include "TwoDimensional", "XYAreaChart", "XYStackedArea", "XYLineChart", "XYLineChart", and "TimeSeriesChart". The "Input" component is connected to the "TimeSeriesChart".

On the left side, there is a "Basic" tab with a "TimeSeriesChart" configuration table:

TimeSeriesChart	TimeSeriesChart
Device Name	<none>
Tag Register	
Chart Title	
Domain Gridlines Visible ?	True
Name	TimeSeriesChart
Plot Background Color	
Range Gridlines Visible ?	True
Show Points ?	False
Sort Data ?	True
X Label	Not Set
Y Label	Not Set

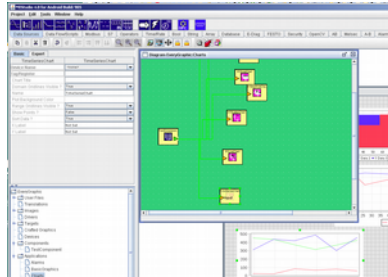
Below the configuration table is a file explorer showing a tree structure:

- EveryGraphic
 - User Files
 - Translations
 - Images
 - Drivers
 - Targets
 - Crafted Graphics
 - Devices
 - Components
 - TestComponent
 - Applications
 - Alarms
 - BasicGraphics
 - Charts

On the right side, there is a preview window showing a 3D bar chart and a 2D line chart. The 3D chart has three data series (Data 2 and Data 3) and the 2D chart has one data series (Y).

MI Studio IDE - Diagram (Logic) Window

Uses Data Received in Real-Time or from databases



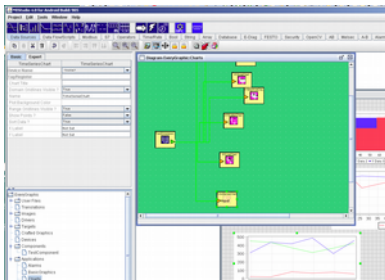
- Connect to Display on Web
 - Chart Values
 - Text
 - Panels, etc.
- Execute Logic
 - If/then
 - Greater Than/Less than
 - Timed (has it been > 5 seconds)
 - Etc.
- Databases
- SPC
- Scripting
 - Almost unlimited possibilities



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MI Studio IDE - Diagram (Logic) Window

Interacts with data
in Real Time



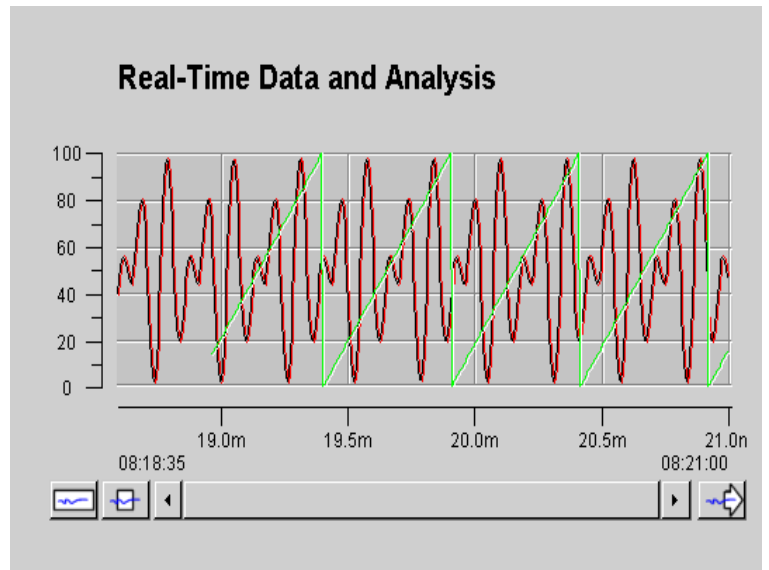
- Stop Lot
- Generate Alarm
 - Operator Messaging
 - Pause Tool
- Change Tool State
- Etc.

Logic Components - SPC and Trending

- SPC Analysis Components

SPC	C_p	C_{pk}	LCL	P_p	P_{pk}	R	σ	σ_{est}	UCL	\bar{X}	$\bar{\bar{X}}$
Data Sources	OPC	Basic Manipulators		Flow Control		Math	Conversions	Rate/Counting	Date/Time		
Bit Manips	Bool	String	Array	Diagnostics	Database	Trending	Alarms	SPC	PLC	Serial Port	ErgoVU

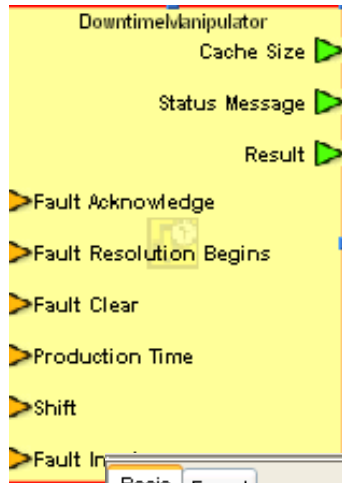
- Historical and Trend Viewing Components





Logic Components – Fault Tracking

Fault Tracking, OEE and Machine Downtime Analysis Components



Downtime Manipulator	
Cache Size	0
CommonFaultInterval	10
Create Table?	False
Database Connection Setup	
Fault Table Name	
Name	DowntimeManipulator
SpecialTableName	

Basic	
Chart Bean	
Chart Title	
ChartType	No Chart
Shift Length	No Chart



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Logic Components - Report Generation

- Reports Components (PDF, CSV, HTML, Excel)

MISstudio Test Build 4-July-2005 03:24 AM

Project Edit Tools Window Help

Data Sources: Math, Conversions, OPC, Date/Time, BACnet, Bit Manips, Bool, String, Array, Database

SimpleReport	SimpleReport4
Background Color	
Data Font	10pt. Monospaced.plain F
Date Format	d MMM yyyy HH:mm:ss
Intercolumn Gap	14
Label Font	12pt. Dialog.bold
Maximum Report Age	24h
Name	SimpleReport4
Number Format	0.0000
Orientation	Landscape
Outline Color	
OutputFormat	PDF
Page Footer	Tablet Press, Inc.
Page Header	Real time Parameters
Paper Size	Determined by Locale
Report Footer	End Of Report
Report Header	Real-Time Parameters Repor
Report Name	SpecialReport
Row Height	15

Diagram History

```
graph LR; Button[Button] --> HistoricalDatabaseSe...[HistoricalDatabaseSe...]; HistoricalDatabaseSe... --> SimpleReport4[SimpleReport4 Output];
```



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Logic Components - Report Generation

Real-Time Parameters Report				
Reading Time	R1	F1	I1	S12
18 Jul 2005 19:07:27	46.0000	49.0000	20.0000	23.0000
18 Jul 2005 19:07:57	52.0000	50.0000	79.0000	22.0000
18 Jul 2005 19:08:27	50.0000	49.0000	38.0000	74.0000
18 Jul 2005 19:08:57	54.0000	50.0000	97.0000	70.0000
18 Jul 2005 19:09:27	49.0000	51.0000	56.0000	45.0000
18 Jul 2005 19:09:57	49.0000	49.0000	15.0000	51.0000
18 Jul 2005 19:10:27	51.0000	50.0000	74.0000	41.0000
18 Jul 2005 19:10:57	49.0000	50.0000	33.0000	19.0000
18 Jul 2005 19:11:27	54.0000	50.0000	93.0000	50.0000
18 Jul 2005 19:11:57	53.0000	48.0000	52.0000	96.0000
18 Jul 2005 19:12:27	48.0000	48.0000	11.0000	69.0000
18 Jul 2005 19:12:57	46.0000	50.0000	71.0000	9.0000
18 Jul 2005 19:13:27	49.0000	50.0000	30.0000	17.0000
18 Jul 2005 19:13:57	45.0000	51.0000	90.0000	68.0000
18 Jul 2005 19:14:27	46.0000	49.0000	49.0000	75.0000
End Of Report				

18-Jul-2005 19:14:44

Tablet Press , Inc.

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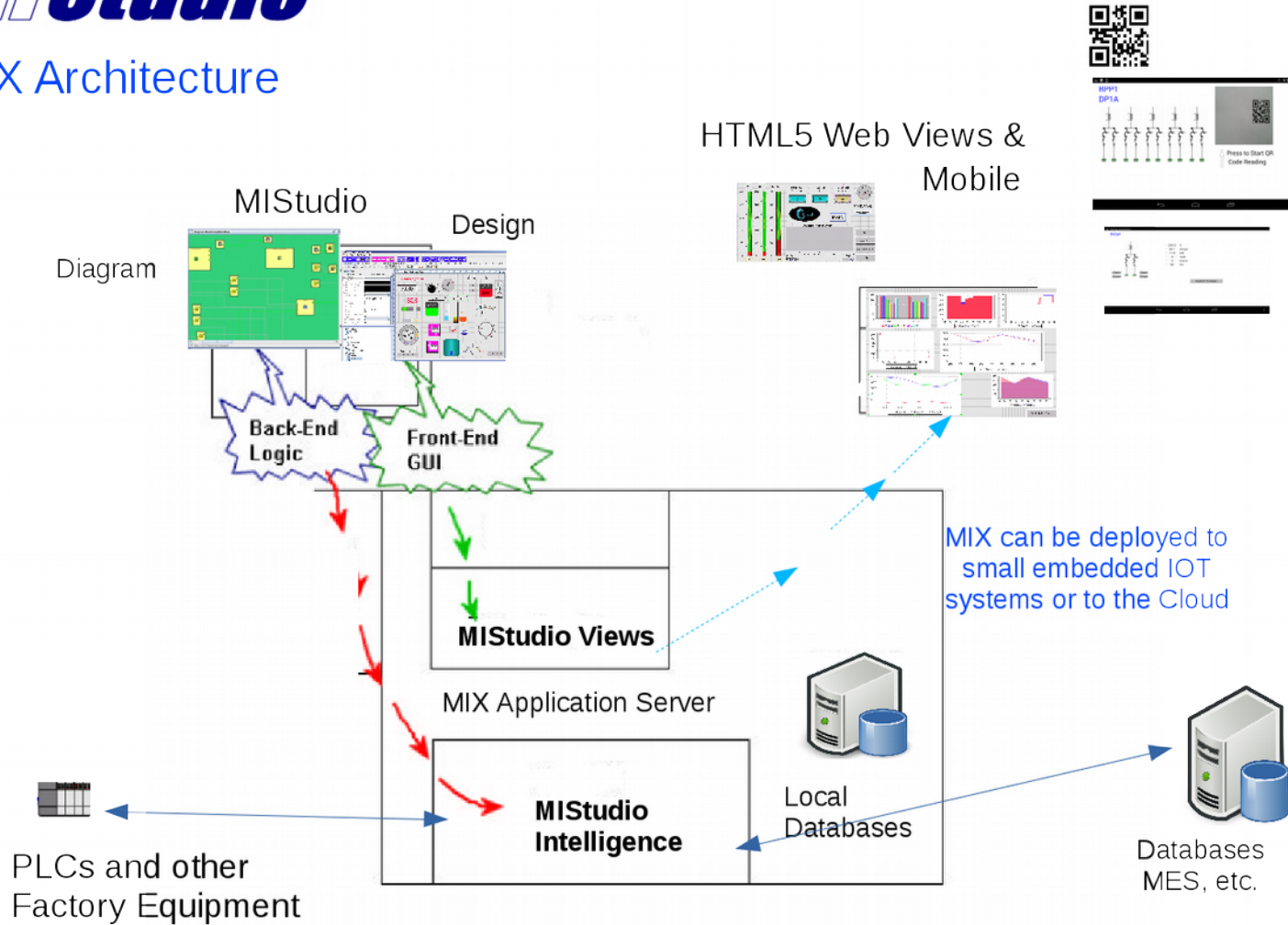


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MStudio

MIX Architecture





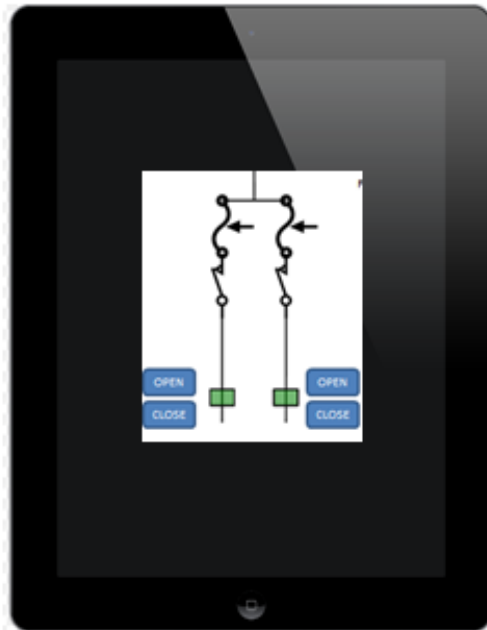
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QR Codes – Scratching the surface of Mobile

Put labels on tools, wiring, etc. Scan the code go directly to the page with the details.



Use simple labels to switch between views



Mobile has revolutionized the consumer space. What can it do in Manufacturing/IOT? It's so much more than a simple view.