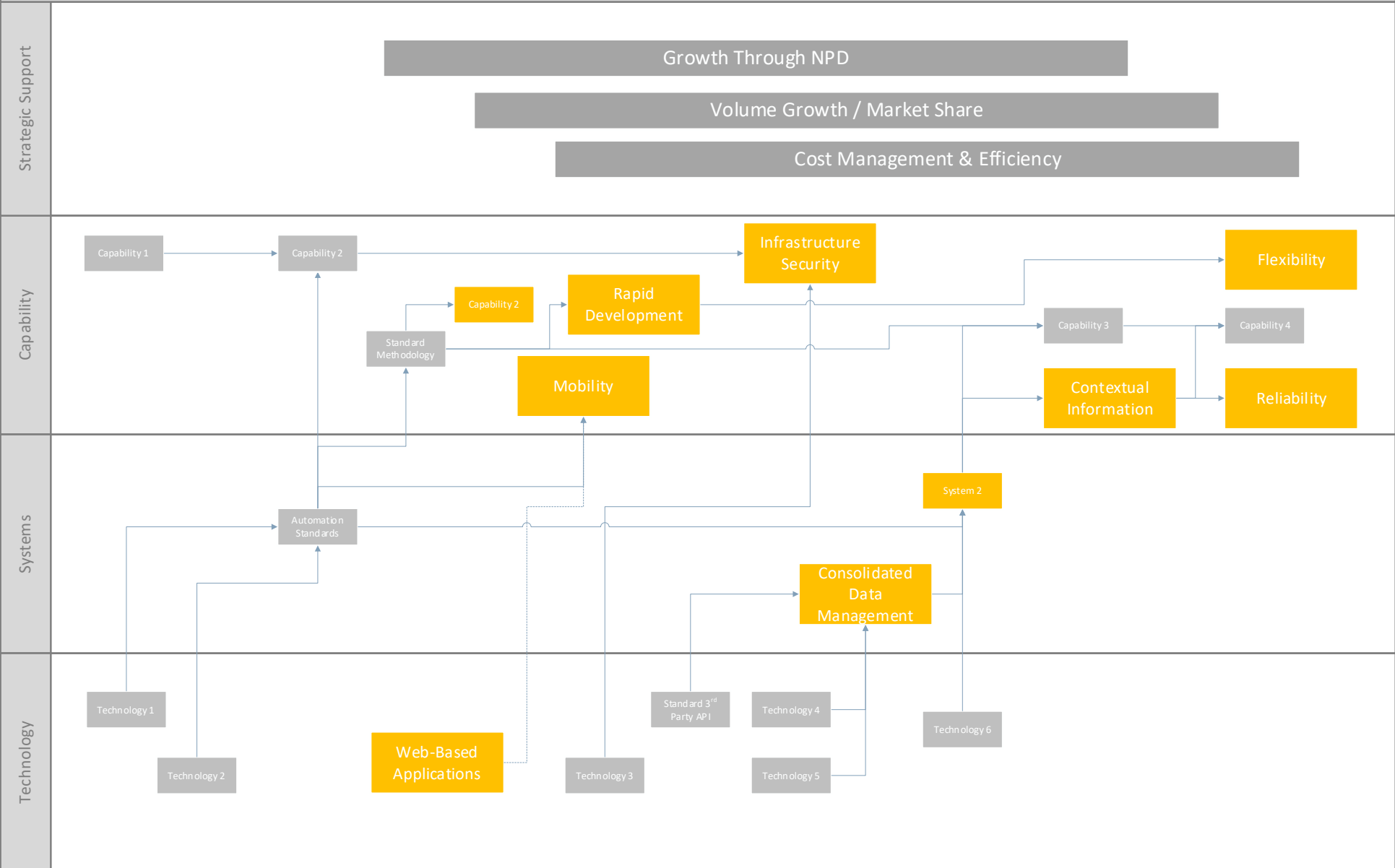


Deon Korb

Engineering Manager: Electrical and Control Systems
Clover



Clover Automation Roadmap



Strategic Alignment

Common Challenges

- 1 Cost
- 2 Complexity
- 3 Resource Requirements



Requirement: Capability

1

Fit on existing PLC standards and Infrastructure

2

Run on Microsoft platform with latest and greatest versions

3

Robust architecture and a variety of client devices



Criteria Met: Capability

1

Installed and connected to our controllers in minutes

2

Accessed easily from many client devices

3

Redundancy that works, with caching and store and forward



Requirement: Scalability

- 1 Start small and expand (SCADA and Historian) | Tags and Clients
- 2 Simple licensing model that does not require a precise forecast
- 3 Scalable project implementation, concurrent development



Criteria Met: Scalability

1

Unlimited tags, unlimited clients

2

Multiple servers, across multiple sites

3

Concurrent development

Requirement: Simplicity

- ① User interface. High-performance HMI. Familiar levels of information
- ② Reusable assets and templates
- ③ Rapid rollout of instance without redevelopment



Criteria Met: Simplicity

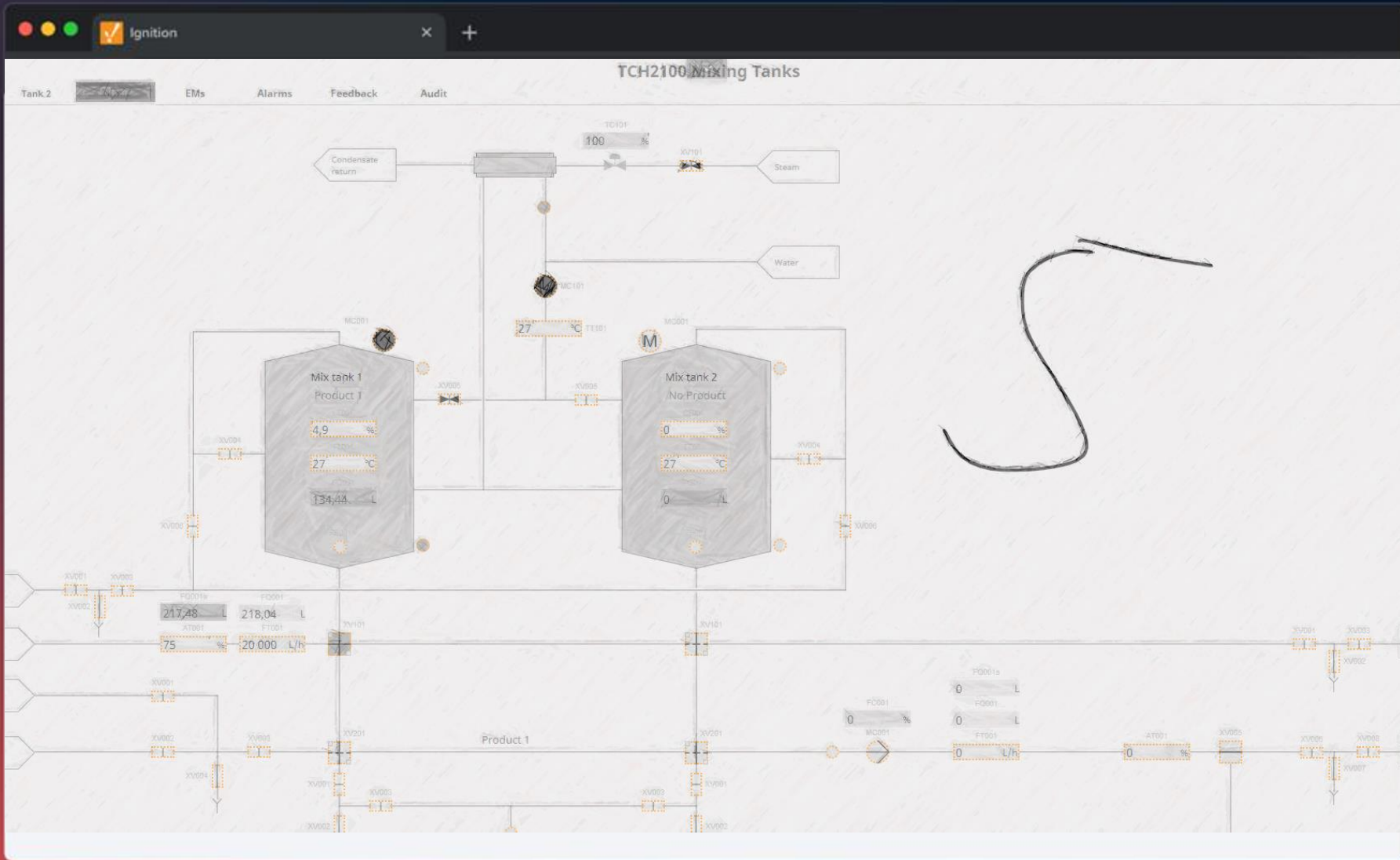
- 1 Familiar information using a modern navigation strategy for the user
- 2 Reusable assets with rapid instantiation for our integrator partners
- 3 Runtime editing and configuration for the commissioning engineer



The screenshot shows the Ignition software interface for TCH2100 Mixing Tanks. The interface is divided into several sections:

- Top Navigation:** Includes tabs for Tank 1, Tank 2, Mimic, EMs, Alarms, Feedback, and Audit. The Tank 1 tab is circled in red.
- Left Sidebar:** Contains sections for CONTROL RECIPE, OEM INPUT, and USER INTERFACE.
- Central Workspace:** A large area with a faint background image of a tank. A vertical line is drawn in the center.
- Right Sidebar:** Contains a STATE CONTROL section with a state diagram and detailed step descriptions. A bracket is drawn under the state diagram.

1. Contextual Dashboard
2. State diagram and navigator
3. Detailed step descriptions
4. Indicating tabs per unit of the same class

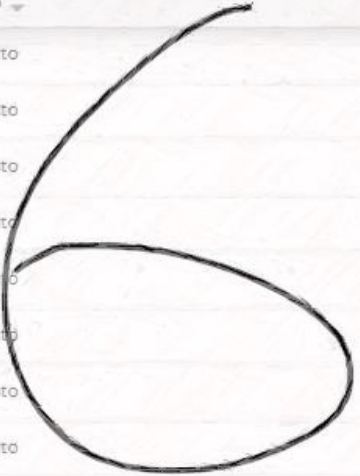


5. Mimic with popups for details and quick actions

TCH2100 Mixing Tanks

Alarms Feedback Audit

Description	Owner	Auto	Error
OEM CIR End Point	TCHup2101opCharging	All Auto	No Error
Mixing Tank Hot water utility	TCH2100EM01	All Auto	No Error
Mixing Tank CIP Supply	Not Acquired	All Auto	No Error
Mixing Tank CIP Return	Not Acquired	All Auto	No Error
Transfer line to User	Not Acquired	All Auto	No Error
Agitator	TCHup2101opCharging	All Auto	No Error
Heating	TCHup2101opCharging	All Auto	No Error
Inlet/Outlet	TCHup2101opCharging	All Auto	No Error
Agitator	Not Acquired	All Auto	No Error
Heating	Not Acquired	All Auto	No Error
Inlet/Outlet	Not Acquired	All Auto	No Error



6. Contextual Auto populating EM status table

Ignition

TCH2100 Loading Tanks

Tank 2 Mimic EMs Feedback Audit


ACTIVE

Active, Unacknowledged Active, Acknowledged Cleared, Unacknowledged

Time	Display Path	Label	Priority	State
10/23 10:38:46	TCH1101FT001 - Mode	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2101KV201B - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2100XV002 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102XV101A - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102LT001 - Mode	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH3101XV002 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2101LT001 - Mode	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102W201A - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2100MC001 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2100LSH001 - Mode	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH3101XV008 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102XV101 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2101XV006 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2101LSH001 - Mode	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2100MC101 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102XV005 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH3101XV003 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102XV101B - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2101ZS001 - Mode	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102XV004 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102XV006 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102ZS001 - Mode	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2100TT101 - Mode	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH2102MC001 - Simulation	Alarm	Diagnostic	Active, Unacknowledged
10/23 10:38:46	TCH3101XV007 - Simulation	Alarm	Diagnostic	Active, Unacknowledged

7. Contextual Alarm table

TCH2100 Mixing Tanks

Terms  Audit

Category	Priority	Name	Added	Re
Description not Configured	Bug / Issue	System	08/10/2022 01:02 pm	



8. Contextual feedback table

Ignition
 https://localhost:8008/welcome
 Tagname Level 1234XY123A
 Deon Korb

QBC2101 Cheese Pasteuriser

Control Page Mimic EMs Alarms Feedback Audit

DASHBOARD

PASTEURISER FLOWRATE
QBC2101FT001
22 000 L/h

THERMISATION TEMPERATURE
QBC2101TT003
61 °C

DISCHARGE TEMPERATURE
QBC2101TT004
25 °C

PASTEURISATION TEMPERATURE
QBC2101TT010
73 °C

MAXIMUM WATER CIRCULATION
00:31:27

TIME SINCE CIP
22:28:27

STAGE DIAGRAM

QBCup2101 Water Circulation Pause Shutdown

```

graph TD
  Idle --> QBCup2101opCIP
  QBCup2101opCIP --> QBCup2101opWaterCirc
  QBCup2101opWaterCirc --> QBCup2101opProduction
  QBCup2101opProduction --> QBCup2101opWaterCirc
  QBCup2101opWaterCirc --> Idle
  
```

HEATING CONTROL

PASTEURISER TEMPERATURES

QBCup2101opWaterCirc
 Index01 5000: Circulation [CIP or Production request or Temperature not in spec (Yes)] (Duration 00:00:04)
 Index02 999: Separator startup complete (Duration 00:27:35)
 Index03 999: Clarifier Startup Complete (Duration 00:27:35)

MacBook Pro

Example

ELEV 8

THANK YOU

