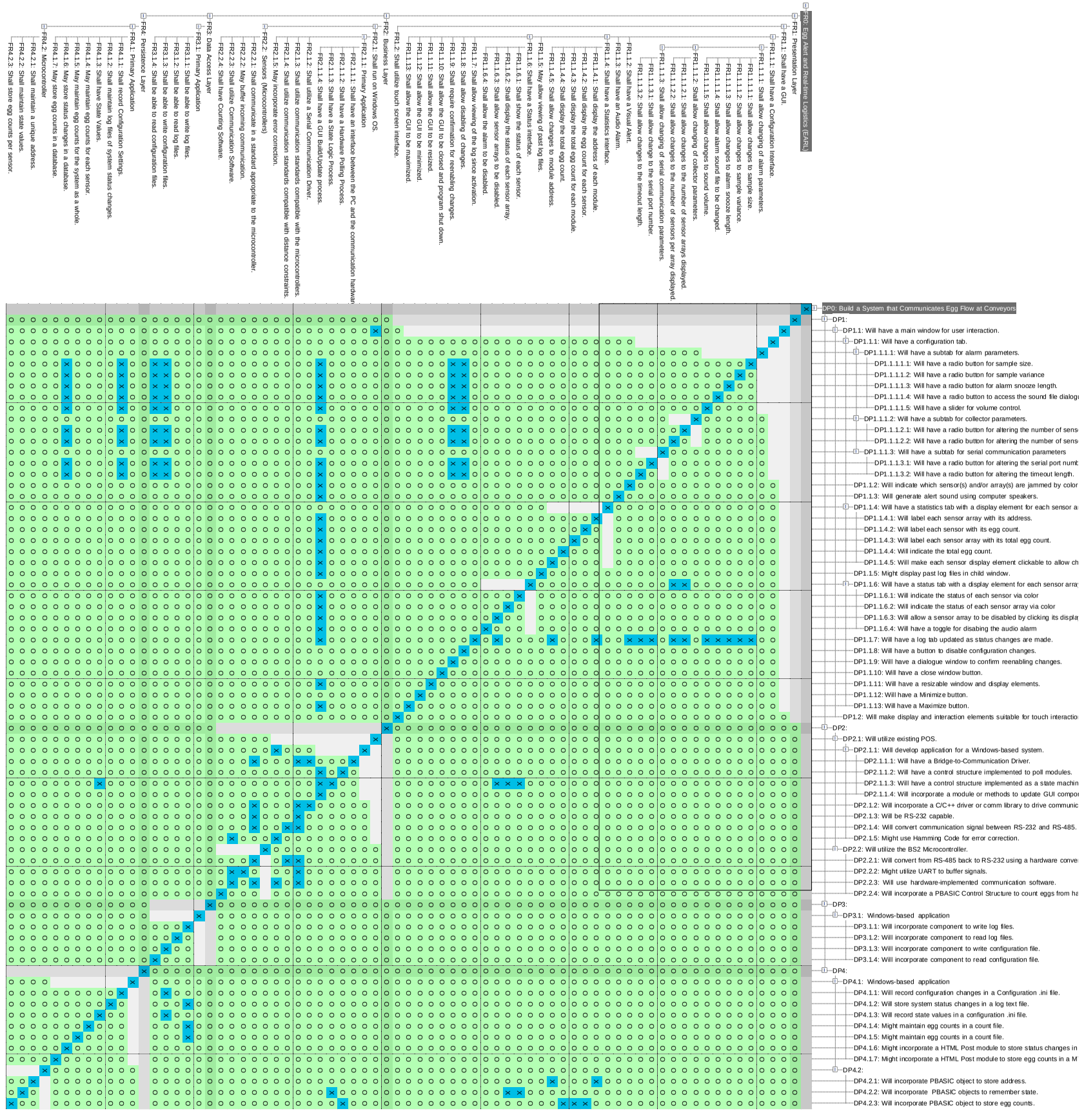
FR0: Egg Alert and Realtime Logistics (EARL)
FR1: Presentation Layer
FR1.1: Shall have a GUI.
FR1.1.1: Shall have a Configuration Interface.
FR1.1.1.1: Shall allow changing of alarm parameters.
FR1.1.1.1.1: Shall allow changes to sample size.
FR1.1.1.1.2: Shall allow changes to sample variance.
FR1.1.1.1.3: Shall allow changes to alarm snooze length.
FR1.1.1.1.4: Shall allow alarm sound file to be changed.
FR1.1.1.1.5: Shall allow changes to sound volume.
FR1.1.1.2: Shall allow changing of collector parameters.
FR1.1.1.2.1: Shall allow changes to the number of sensor arrays displayed.
FR1.1.1.2.2: Shall allow changes to the number of sensors per array displayed.
FR1.1.1.3: Shall allow changing of serial communication parameters.
FR1.1.1.3.1: Shall allow change to the serial port number.
FR1.1.1.3.2: Shall allow changes to the timeout length.
FR1.1.2: Shall have a Visual Alert.
FR1.1.3: Shall have an Audio Alarm.
FR1.1.4: Shall have a Statistics Interface.
FR1.1.4.1: Shall display the address of each module.
FR1.1.4.2: Shall display the egg count for each sensor.
FR1.1.4.3: Shall display the total egg count for each module.
FR1.1.4.4: Shall display the total egg count.
FR1.1.4.5: Shall allow changes to module address.
FR1.1.5: May allow viewing of past log files.
FR1.1.6: Shall have a Status interface.
FR1.1.6.1: Shall show the status of each sensor.
FR1.1.6.2: Shall display the status of each sensor array.
FR1.1.6.3: Shall allow sensor arrays to be disabled.
FR1.1.6.4: Shall allow the alarm to be disabled.
FR1.1.7: Shall allow viewing of the log since activation.
FR1.1.8: Shall allow disabling of changes.
FR1.1.9: Shall require confirmation for reenabling changes.
FR1.1.10: Shall allow the GUI to be closed and program shut down.
FR1.1.11: Shall allow the GUI to be resized.
FR1.1.12: Shall allow the GUI to be minimized.
FR1.1.13: Shall allow the GUI to be maximized.
FR1.2: Shall utilize touch screen interface.
FR2: Business Layer
FR2.1: Shall run on Windows OS.
FR2.1.1: Primary Application
FR2.1.1.1: Shall have an interface between the PC and the communication hardwar
FR2.1.1.2: Shall have a Hardware Polling Process.
FR2.1.1.3: Shall have a State Logic Process.
FR2.1.1.4: Shall have a GUI Build/Update process.
FR2.1.2: Shall utilize communication standards compatible with the microcontrollers.
FR2.1.3: Shall utilize communication standards compatible with distance constraints.
FR2.1.4: May utilize communication standards compatible with sensor.
FR2.1.5: May utilize communication standards compatible with distance extension.
FR2.2: Sensors (Microcontroller)
FR2.2.1: Shall communicate in a standard appropriate to the microcontroller.
FR2.2.2: May buffer incoming communication.
FR2.2.3: Shall utilize Communication Software.
FR2.2.4: Shall have Counting Software.
FR3: Data Access Layer
FR3.1: Primary Application
FR3.1.1: Shall be able to write log files.
FR3.1.2: Shall be able to read log files.
FR3.1.3: Shall be able to write configuration files.
FR3.1.4: Shall be able to read configuration files.
FR4: Persistence Layer
FR4.1: Primary Application
FR4.1.1: Shall record Configuration Settings.
FR4.1.2: Shall maintain log files of system status changes.
FR4.1.3: Shall have State Values.
FR4.1.4: May maintain egg counts for each sensor.
FR4.1.5: May maintain egg counts for the system as a whole.
FR4.1.6: May store status changes in a database.
FR4.1.7: May store egg counts in a database.
FR4.2: Microcontroller
FR4.2.1: Shall maintain a unique address.
FR4.2.2: Shall maintain state values.
FR4.2.3: Shall store egg counts per sensor.
DP0: Build a System that Communicates Egg Flow at Conveyors
DP1:
DP1.1: Will have a main window for user interaction.
DP1.1.1: Will have a configuration tab.
DP1.1.1.1: Will have a subtab for alarm parameters.
DP1.1.1.1.1: Will have a radio button for sample size.
DP1.1.1.1.2: Will have a radio button for sample variance
DP1.1.1.1.3: Will have a radio button for alarm snooze length.
DP1.1.1.1.4: Will have a radio button to access the sound file dialogu
DP1.1.1.1.5: Will have a slider for volume control.
DP1.1.1.2: Will have a subtab for collector parameters.
DP1.1.1.2.1: Will have a radio button for altering the number of sens
DP1.1.1.2.2: Will have a radio button for altering the number of sens
DP1.1.1.3: Will have a subtab for serial communication parameters
DP1.1.1.3.1: Will have a radio button for altering the serial port numb
DP1.1.1.3.2: Will have a radio button for altering the timeout length.
DP1.1.2: Will indicate which sensor(s) and/or array(s) are jammed by color
DP1.1.3: Will generate alert sound using computer speakers.
DP1.1.4: Will have a statistics tab with a display element for each sensor a
DP1.1.4.1: Will label each sensor array with its address.
DP1.1.4.2: Will label each sensor with its egg count.
DP1.1.4.3: Will label each sensor array with its total egg count.
DP1.1.4.4: Will indicate the total egg count.
DP1.1.4.5: Will make each sensor display element clickable to allow ch
DP1.1.5: Might display past log files in child window.
DP1.1.6: Will have a status tab with a display element for each sensor arra
DP1.1.6.1: Will indicate the status of each sensor via color
DP1.1.6.2: Will indicate the status of each sensor array via color
DP1.1.6.3: Will allow a sensor array to be disabled by clicking its displa
DP1.1.6.4: Will have a toggle for disabing the audio alarm
DP1.1.7: Will have a log tab updated as status changes are made.
DP1.1.8: Will have a button to disable configuration changes.
DP1.1.9: Will have a dialogue window to confirm reenabling changes.
DP1.1.10: Will have a close window button.
DP1.1.11: Will have a resizable window and display elements.
DP1.1.12: Will have a Minimize button.
DP1.1.13: Will have a Maximize button.
DP1.2: Will make display and interaction elements suitable for touch interactio
DP2:
DP2.1: Will utilize existing POS.
DP2.1.1: Will develop application for a Windows-based system.
DP2.1.1.1: Will have a Bridge-to-Communication Driver.
DP2.1.1.2: Will have a control structure implemented to poll modules.
DP2.1.1.3: Will have a control structure implemented as a state machin
DP2.1.1.4: Will incorporate a module or methods to update GUI compo
DP2.1.2: Will incorporate a C/C++ driver or comm library to drive communic
DP2.1.3: Will be RS-232 capable.
DP2.1.4: Will convert communication signal between RS-232 and RS-485.
DP2.1.5: Might use Hamming Code for error correction.
DP2.2: Will utilize the BS2 Microcontroller.
DP2.2.1: Will convert from RS-485 back to RS-232 using a hardware conve
DP2.2.2: Might utilize UART to buffer signals.
DP2.2.3: Will use hardware-implemented communication software.
DP2.2.4: Will incorporate a PBASIC Control Structure to count eggs from ha
DP3:
DP3.1: Windows-based application
DP3.1.1: Will incorporate component to write log files.
DP3.1.2: Will incorporate component to read log files.
DP3.1.3: Will incorporate component to write configuration file.
DP3.1.4: Will incorporate component to read configuration file.
DP4:
DP4.1: Windows-based application
DP4.1.1: Will record configuration changes in a Configuration .ini file.
DP4.1.2: Will store system status changes in a log text file.
DP4.1.3: Will record state values in a configuration .ini file.
DP4.1.4: Might maintain egg counts in a count file.
DP4.1.5: Might maintain egg counts in a count file.
DP4.1.6: Might incorporate a HTML Post module to store status changes in
DP4.1.7: Might incorporate a HTML Post module to store egg counts in a M
DP4.2:
DP4.2.1: Will incorporate PBASIC object to store address.
DP4.2.2: Will incorporate PBASIC objects to remember state.
DP4.2.3: Will incorporate PBASIC object to store egg counts.