

IOWA STATE UNIVERSITY

CANdroid

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Client

Vermeer

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1 PROBLEM

Modern off-highway/agricultural systems use outdoor rated LCD displays to implement user interfaces. These current solutions are either too expensive, or put users at risk being an unsafe distance from the machines. Vermeer wishes to replace these expensive display systems with a more inexpensive solution as well as provide a more flexible development environment. A J1939 CAN system is used on most Vermeer systems, but would like to be expandable to other protocols. Vermeer has expressed their wish of emphasizing research and development with solutions utilizing android systems due to their prior experience with this technology.

In more layman's terms: Vermeer currently uses a CAN bus to communicate data from a machine, such as a baler, to a VT (Virtual Terminal) in the cab of the tractor that is towing it. These VTs are wired, and proprietary. This makes them expensive and exposes the CAN bus to the harsh Agricultural environment. Replacing the Virtual Terminal with an android device has the potential to greatly reduce cost. While making the connection to the android device wireless can help prevent erosion and weakening of the system.

$$\begin{aligned}
(x+y)^3 &= (x+y)^2(x+y) \\
&= (x^2 + 2xy + y^2)(x+y) \\
&= (x^3 + 2x^2y + xy^2) + (x^2y + 2xy^2 + y^3) \\
&= x^3 + 3x^2y + 3xy^2 + y^3
\end{aligned}
\tag{1.1}$$

Phasellus viverra nulla ut metus varius laoreet. Quisque rutrum. Aenean imperdiet. Etiam ultricies nisi vel augue. Curabitur ullamcorper ultricies

1.1 HEADING ON LEVEL 2 (SUBSECTION)

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

$$A = \begin{bmatrix} A_{11} & A_{21} \\ A_{21} & A_{22} \end{bmatrix} \tag{1.2}$$

Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem.

1.1.1 HEADING ON LEVEL 3 (SUBSUBSECTION)

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HEADING ON LEVEL 4 (PARAGRAPH) Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem. Nulla consequat massa quis enim.

2 LISTS

2.1 EXAMPLE FOR LIST (3*ITEMIZE)

- First item in a list
 - First item in a list
 - * First item in a list
 - * Second item in a list
 - Second item in a list
- Second item in a list

2.2 EXAMPLE FOR LIST (ENUMERATE)

1. First item in a list
2. Second item in a list
3. Third item in a list