Designing the Farm of the Future
Emily Horn, Deere & Co.
A Proud Past

1837 John Deere built his first plow

1848 Headquarters move to Moline, IL

1863 First implement adapted for riding

1918 John Deere enters the tractor business
A Smart Past

1994  Invested in GPS

1996  First fully integrated yield-mapping package

2002  AutoTrac™ starts production

2017  Blue River Technology
• Population growth
  – Demand for food

• Farm Consolidation
  – Skilled labor shortages

• Environmental Sustainability
Technology: Looking Ahead

Movie: https://www.youtube.com/watch?v=1nfqZGebr0g&feature=emb_logo
Designing the Farm of the Future... requires the infrastructure of the future
Today, virtual engineering is prevalent… not pervasive
Integration Across System Layers

System of Systems

Machine Systems

Functional Sub-system

Assembly, Components

Parts

- Farm
- Combine
- Grain Carts
- Semi-trucks
- ...
- Powertrain Model
- Cleaning System
- Controls
- ...
Integration Across System Layers
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- System Design
- Sub-System Design
- Component Design
- Unit Test
- Integration Test
- System Test
- Acceptance Test
- Code Gen

Designing the Farm of the Future
Integration Across Engineering Disciplines

Integration Platform

- Requirements
- System Design
- Sub-System Design
- Component Design
- System Test
- Integration Test
- Unit Test
- Acceptance Test
Integration Across Engineering Disciplines

- Requirements
- System Design
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- Unit Test
Integration Across Engineering Disciplines

Requirements

System Design

Sub-System Design

Component Design

Integration Test

System Test

Unit Test

Acceptance Test

Systems Engineer
Integration Across Engineering Disciplines

Vehicle Dynamics

- Requirements
- System Design
- Sub-System Design
- Component Design
- Integration Test
- System Test
- Unit Test
- Acceptance Test
Integration Across Engineering Disciplines
Expanding to Autonomous Technology

Flexibility  Open Architecture  Value
Reusable Components
Autonomous Machine Simulation
Questions?

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