

# Feedstock Procurement with Tech-savvy Suppliers



Mobile Cloud Computing in the Bioenergy Sector





# Topics to Cover



- About Verdanté
- Biomass challenges
- Looking at Standards
- Technology overview
- A brand new “First mile” solution

We make biomass reliable.



- IT Solutions for Biomass
  - Enterprise Solutions
  - Mobile applications
- Consulting
  - Pile Management
  - Quality and Standards
  - Process Optimization
  - Commercial Appraisals
  - Sustainability Reporting

#### Bioenergy Pro™

First mobile application designed for the industry

#### Bioenergy ProEX™

Patent-pending biomass transaction system

We make biomass reliable.



# Key Problems in Biomass Supply Chains

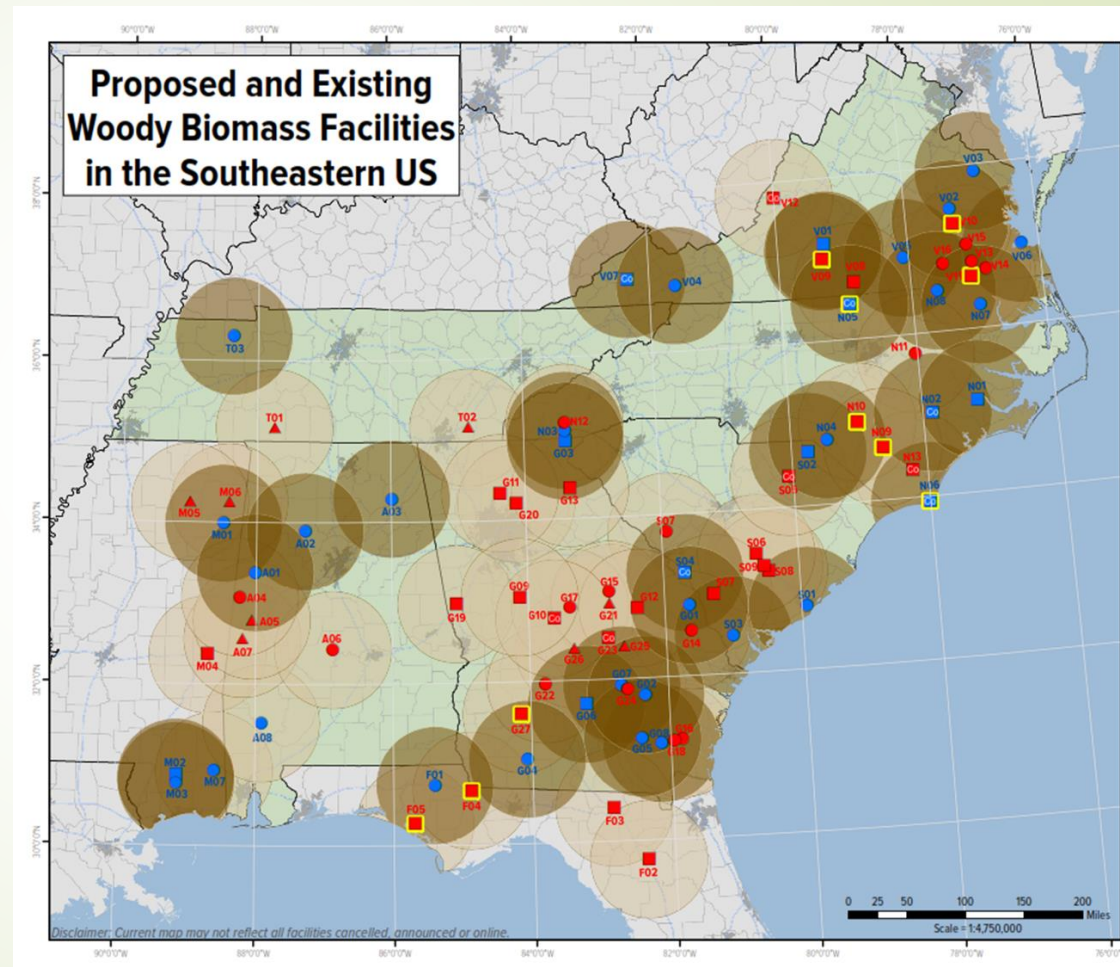
- Natural product
- Diversity of producers and workers
- Moisture management – the energy business should be in MWhs, not tons!
- Accurate information from the field/forest is lagged at best
- Lab data can take days or weeks to be available to an entire team



We make biomass reliable.

# Pain Points

- Biomass is dispersed widely, highly variable, bulky, expensive to transport, and degrades over time, but it is carbon-neutral and renewable.
- Energy projects without feedstock contracts are not financeable
- Lack of transparency results in load refusal, downtime, and failure
- Commodity status for bioenergy feedstocks is elusive due to lack of standardized data



# Real-time Supply Chain Data Enables...

- 1) New business models
  - Vertical Integration
  - Outsourcing
- 2) Networking with small producers
- 3) Easy, near real time data sharing
- 4) Improved specification
- 5) Easy, clear audit trail



We make biomass reliable.



# Remote Storage

Just in time inventory.











# Sampling Feedstock

Understanding standards.































# From forest to gate to lab

Can we push standards back into the forest?

1641 Sigman Road  
PO Box 919  
Conyers, GA 30012  
1-770-922-8000 ext 303  
www.tpinspection.com



TIMBER  
PRODUCTS  
INSPECTION

---

## Analytical Report

E96-9179  
VERDANTE BIOENERGY SERVICES  
626 Harper Ave NW  
Lenoir, NC 28645

---

TP ID Number:	DBL150169-1	Sample Weight (lbs):	2.22
Product Recognized As:	Wood Chips/Pine Needles	Sample Received:	5/20/2015
Sample Designation:	10-SMS-511	Report Date:	5/27/2015
Sample Date:		Purchase Order:	

---

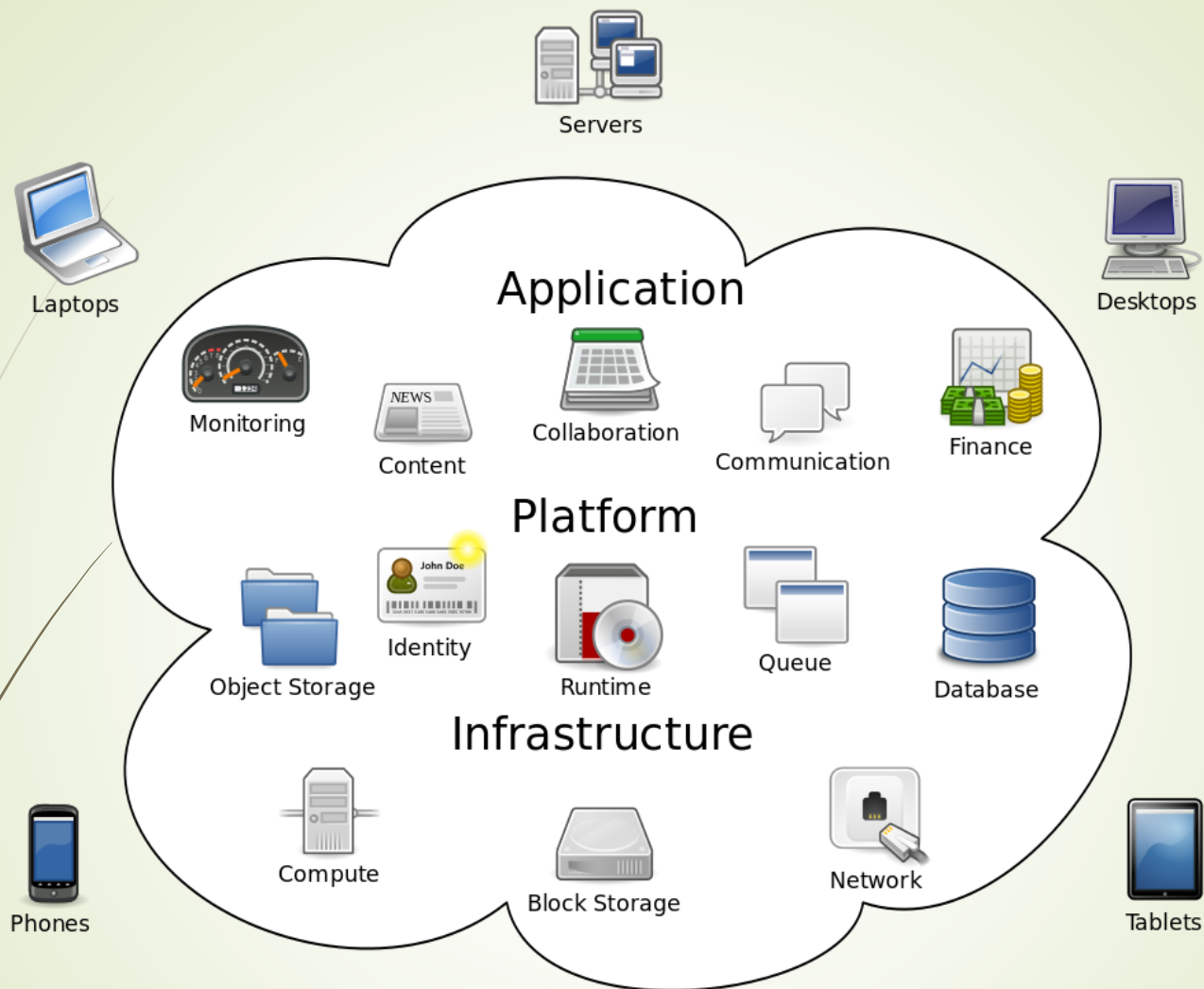
Parameter	As-Received	Dry Basis	Analytical Method	ISO 17025
Total Moisture (%)	37.38		ASTM E871	Q
Ash (%)	1.18	1.88	ASTM D1102	Q
GCV (BTU/lb)	5277	8427	ASTM E711	Q

# What is an ERP Solution?

Enterprise Resource Planning (ERP) is business management software used to collect, store, manage and interpret business activity data

## WHAT IT DOES

- Tracks business resources
  - Raw materials
  - Human resources
  - Production capacity
  - Vendors/Partners
- Tracks business commitments
  - Contracts
  - Purchase orders
  - Invoices and Payroll



# Cloud Computing

We make biomass reliable.

# Engage Stakeholders



## Biomass Producer

- Production Reports
- Harvester
- Field Storage



## Contractors

- Processing
- Transport
- Laboratory



## Conversion Facility

- Operations
- Laboratory
- Financial

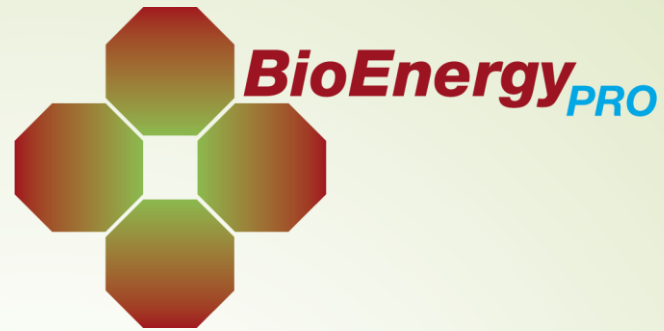


## External Auditors

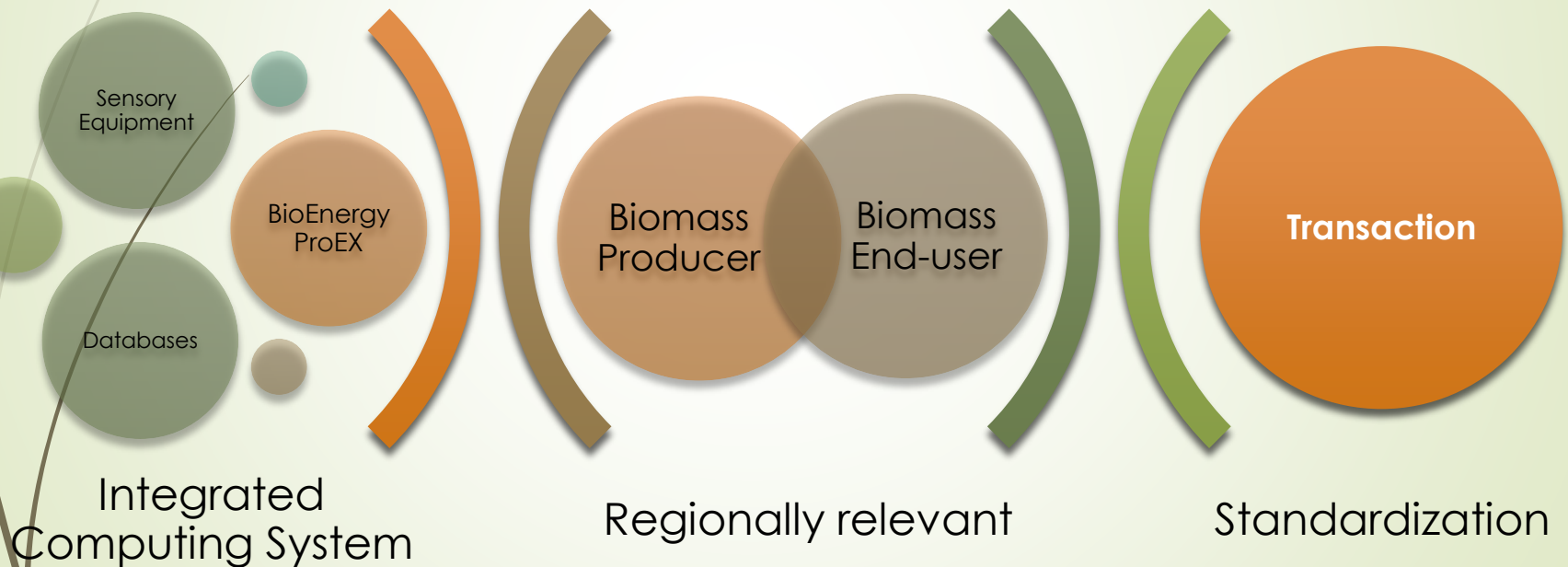
- Regulatory
- Sustainability
- Subsidy

We make biomass reliable.

Coming  
Fall 2015

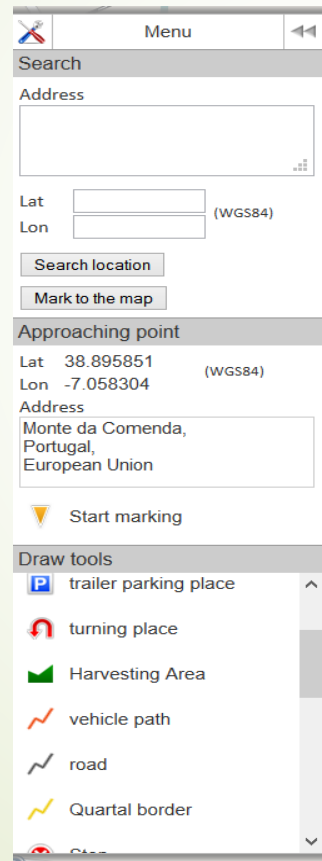
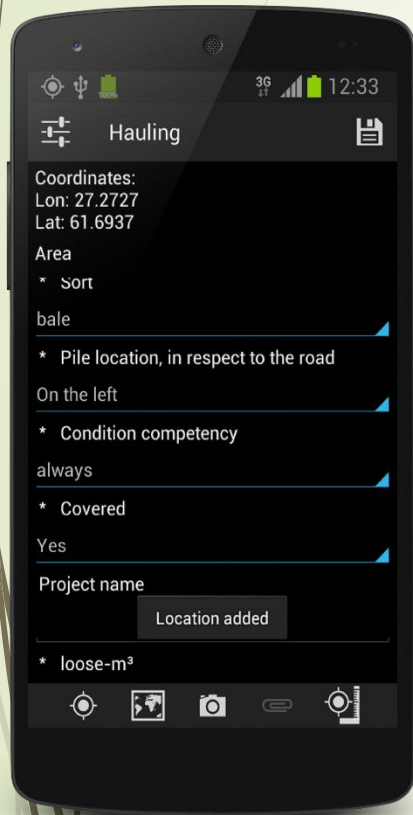


## Biomass Transaction Platform



We make biomass reliable.

# Mobile and Desktop Views



- Geo-location Record
- Order Execution
- Tracking
- Photo, video, PDF, and text documentation
- Easy reporting

Info	
Name	Badajoz Agro_70-1-578
Code	70-1-578
Work sort	Transport
Deadline	Mar 9, 2013
State	Completed

We make biomass reliable.



# Functions of the System

- Purchasing and Scheduling
- Supplier reviews
- Chain of Custody
- Billing/Payments
- Pricing toolbox

We make biomass reliable.



# Pricing Toolbox

- Biomass indices
  - 3<sup>rd</sup> Party reports
  - Internal analysis
- Biomass Cost Analyzer
  - Moisture, ash, BTU
  - Out of spec material discounting
  - Price Bollinger bands
  - Regionally relevant
- Transportation Analyzer
- Sampling SOPs
- Biomass discount model

We make biomass reliable.

# How it works....



We make biomass reliable.

# Real World Scenario - Pilot

## Wood to Industrial Process Energy

- 250,000 tons per year
- \$22 per ton
- Average MC
  - 48% owb received
  - 42% owb utilized
- 6% loss of moisture → \$266,000
- 2% spoilage → \$110,000
- ROI in less than 3 months!
- Bringing ~\$1 million into view on the balance sheet



We make biomass reliable.



*We make biomass reliable.*

David Waechter

(828) 394-1246

[david@verdantebioenergy.com](mailto:david@verdantebioenergy.com)



"We value our customers and their time. Our firm is built upon mutual respect and solid business ethics. I look forward to discussing how Verdanté can make biomass more reliable for your company."