VERDE AURORA™ & CORONA™
Automated AI Loan Origination, Underwriting & Pricing

Verde Aurora & Corona solve each with

- **Big Data**
  - 10,000 Series Many Sources
- **Automation**
  - 99.6% Full Auto
- **Best Models**
  - 5X Better
- **Optimal Pricing**
  - Best Yes

While underwriting $1.4 trillion over 28 years, I’ve learned a few things about lending.
VERDE LENDING SOLUTIONS
A Systematic Approach to Underwriting & Loan Management

**AI-Driven Model Development**
- Probability of Response
- Probability of Default
- Time To Default
- Probability of Early Repay
- Time To Early Repay
- X-sell & Retention
- SME Business Growth

**Financial, Economic & Social Value**

2: Model Development & Form
AI-Driven Reviewable Econometric & Behavioral System

“What If” Testing
- Best Loan Structure
- Best Loan term
- Best Loan Size
- Best APR

3: Loan Optimization & Stress Testing
w/ Economic & Loan Attributes, AI Systems Price, Structure & Stress Test Each Loan

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ADVANCED UNDERWRITING
Conventional Underwriting vs. Verde Aurora™

Conventional Underwriting

- Pass/fail filters used to avoid bad loans.
- This approach has major limitations:
  - No prediction of Probability of Default
  - No prediction of Loss Given Default
  - No prediction of Loan Life Cash Flows
  - No prediction of Profitability
  - Poor Pricing = Wasted Opportunity

Verde Aurora™

- Aurora AI understands Customer Behaviors, Market and Business Economics, and Loan Terms driving credit quality & profitability.

Pass/Fail Criteria

- Approve
- Decline

PD ✓ LGD ✓ Cash Flows ✓ Profits ✓ Most Opportunity ✓ Basel III AA ✓

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VERDE ALLELE™ Loan-Level Forecasting & Account Management
Make the Most of Existing Loan Relationships

- Loan Loss Provisioning
- Continuous Customer Monitoring, Valuation & Stress Testing
- Targeting for Customer Management, Marketing, Collections

Verde Allele™

Loan Loss Provisioning

X-Sell Retention

Collection Remediation

Marketing Intervention

Marketing

No Action

Revenue

Expense

Social, Economic Benefit

Loan Terms & Conditions

Wages, Prices, Rates

Economic & Market Conditions

PD & LGD

Customer Behavior + Payments

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Loan Loss Provision • Stress Testing • Account & Portfolio Valuation • Strategic Planning • Market Assessment
X-Sell • Activation • Retention • Deposit Capture • Reminders • Collections • Pre-Delinquency Intervention
Beyond rhetoric, hypotheses and conventional wisdom...

What is the impact of Big Data Underwriting?

- In Actual Use
- Large Volume & Multiple Years
- Regulated & Audited Lenders
- Basel III Advanced Approach
- Diverse Markets & Customers

Responsible Big Data Approach

- Approves More
- With Greater Inclusion
- Less Credit Risk = Lower APR
Aurora delivers comprehensive, objective and accurate forecasts that drive:

- Higher Approval Rates
- Greater Inclusion
- Higher Capital Flow
- Lower Losses
- More Favorable Pricing
- Better Lender Returns
- Greater Economic Development

That’s a **WIN for**

- Borrowers
- Lenders
- Community
### Discounted Cash Flows

#### Financials

<table>
<thead>
<tr>
<th>Term</th>
<th>Contract</th>
<th>Pay In Full</th>
<th>Default</th>
<th>Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>49,999.20</td>
<td>49,999.20</td>
<td>22,723.73</td>
<td>49,862.42</td>
</tr>
<tr>
<td>38</td>
<td>-</td>
<td>99.57%</td>
<td>-</td>
<td>0.43%</td>
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</table>

<table>
<thead>
<tr>
<th>Scenario Odds</th>
<th>-</th>
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</thead>
<tbody>
<tr>
<td>Principal Paid Less Payoff</td>
<td>(2,617.16)</td>
</tr>
<tr>
<td>Principal Payoff</td>
<td>-</td>
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<tr>
<td>Interest Paid</td>
<td>6,304.71</td>
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<tr>
<td>Fees Paid</td>
<td>0.26</td>
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<tr>
<td>Cost of Debt</td>
<td>(2,486.34)</td>
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<tr>
<td>Account Maintenance</td>
<td>(144.00)</td>
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<tr>
<td>Collections Cost</td>
<td>(0.17)</td>
</tr>
<tr>
<td>Net Repo Recovery</td>
<td>-</td>
</tr>
<tr>
<td>Post Repo Recovery</td>
<td>(9,328.96)</td>
</tr>
<tr>
<td>Unpaid Balance</td>
<td>(5,675.52)</td>
</tr>
<tr>
<td>Gross Loan Value</td>
<td>9,666.12</td>
</tr>
<tr>
<td>Taxes</td>
<td>-</td>
</tr>
<tr>
<td>Net Loan Value</td>
<td>9,666.12</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>26.30</td>
</tr>
</tbody>
</table>

### Discounted Cash Flows Graph

- **Graph**
  - Assumption
  - NOI
  - Occupancy
  - Vacancy
  - Delinquency
  - Default
  - Properties
  - Weighted NPV
  - Gross
  - Cashflow
  - Cashflow NPV
  - Cost of Debt

- **Financials**
  - Gross Loan Value
  - Taxes
  - Net Loan Value
  - Net Present Value

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### Decision Reasons

<table>
<thead>
<tr>
<th>Loan Amount</th>
<th>Interest Rate</th>
<th>Loan Term</th>
<th>Monthly Payment</th>
<th>Default Odds</th>
<th>Net Present Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>67,000.00</td>
<td>14.50%</td>
<td>48</td>
<td>1,847.72</td>
<td>6.41%</td>
<td>220.63</td>
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</tbody>
</table>

### Reason Codes

1. Total Loan Exposure: 10.039
2. Lack of Recent Bank/National Revolving Information: 1.238
3. Balance of Open Mortgage Trades: 1.020
4. Total Loan Balance at Lender: 0.878
5. Too Few Accounts Currently Paid As Agreed: 0.158
6. Loan Size Relative to Capacity to Pay: 0.141
7. Collection History: 0.118
8. Number of Inquiries: 0.037
9. Number or Balance of Trades: 0.019
10. Serious Delinquency, and Public Record or Collection Filed: -0.001
11. Number of Non-Depository Inquiries: -0.020
12. Number or Balance of Collection Trades: -0.246
13. Balance of Open Installment Trades: -1.311

### Policy Declines

<table>
<thead>
<tr>
<th>Loan Amount</th>
<th>Interest Rate</th>
<th>Loan Term</th>
<th>Monthly Payment</th>
<th>Default Odds</th>
<th>Net Present Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under $300</td>
<td>Under 1.7%</td>
<td>Under 5%</td>
<td>Under $75,000</td>
<td>Over 18.00%</td>
<td></td>
</tr>
<tr>
<td>Over $75,000</td>
<td>Over 18.00%</td>
<td>Over 6%</td>
<td>Over $7,781</td>
<td>Over 16.00%</td>
<td></td>
</tr>
<tr>
<td>NPV</td>
<td>negative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### History

- **Status**: APPROVED
- **Date**: 9/14/16 10:11 AM
- **Decision**: 102284

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From application... to decision... w/ tools & reporting
From application... to decision... w/ tools & reporting
From application... to decision... w/ tools & reporting
Ecosystem Perspective

**Economic Conditions**
- Market Demand & Competition
- Local Market Conditions
- National & Global Conditions

**Regulatory Expectations**
- Safety & Soundness
- Fairness & Inclusivity
- Competitive Practice
- Economic Development

**Capital Partner Interests**
- Financial Performance & ROI
- Soundness & Reporting
- Development & Inclusivity

**Lender Goals, Cost & Operations**
- Financial Performance
- Capital Optimization
- Operational Efficiency & Scalability

**Borrower Goals, Ability & Behavior**
- Goals & Economic Opportunities
- Financial Performance & Plasticity
- Financial Behavior & Resourcefulness

**Borrower’s Economic World:**
- Trends and Measures from Macro to Very Local

**Borrower Behaviors:**
- Determination, Resourcefulness, Resilience, Goal Attainment, Self Sacrifice, Tenacity, Obligation

**Loan Purpose & Collateral:**
- Practicality, Goal Fitment, Vested Interest, Efficiency, Realized Value, Confidence

- **Roadways & Transportation**
  - Roadway KM
  - Traffic Counts
  - Construction
  - Transit Counts
  - Ubiquity

- **Mobile Data Detail**
  - Tower
  - Capability
  - Capacity
  - Utilization
  - Phone Ownership
  - Phone Usage
  - Data Usage
  - Mobile Payments

- **Collateral**
  - Valuations
  - Details
  - Population

- **Labor Statistics**
  - Employment
  - Unemployment
  - Wages
  - Other Income
  - Employers
  - Occupations
  - Strike & Stoppage

- **Government**
  - Spending
  - Regulation
  - Permitting
  - Zoning

- **Weather**
  - Temperature
  - Precipitation
  - Air Quality
  - Inclermency
  - Pestilence
  - Migration

- **Commercial Statistics**
  - Production
  - Bus. Financials
  - Sales
  - Consumption
  - Pricing
  - Imports
  - Exports
  - Tariffs
  - Competition

- **Housing**
  - Home/Apt Pricing
  - Foreclosures
  - Permitting
  - Construction
  - HH Size

- **Community**
  - Tenure
  - Affiliation
  - References

- **Banking & Finance**
  - Interest Rates
  - Deposit Detail
  - Loan Detail
  - Equity Markets
  - Debt Markets
  - Payments & Flows

- **Bankruptcy**
- **Health & Education**
  - Attainment
  - Literacy
  - Facilities
  - Economics

- **Other Demographics**
- **Occupancy Rates**
  - Residential
  - Commercial

- **Internet**
  - Access
  - Usage

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**Potentially Useful Data Is More Plentiful Than Most Imagine.**

For example, in **India:**

Verde analyzed nearly **2 billion data series** in a recent study for predicting lending behavior.

And, in **Bangladesh:**

Verde has amassed **over 60,000 data series**, and we expect the number to quickly double.

*Throughout our relationships, we continually identify new sources and work to build access.*

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**What’s Not Useful?** -- Data That’s Not Repeatable, Reliable, Projectable, and Inclusive
Inclusion goals are important for achieving economic and social objectives. Conventional methods fail to support these objectives.

Verde uses big data to identify and estimate inclusion group affiliation.

Our solutions replicate BISG and other regulatory testing standards.

- Real-time = Inclusive Decisions
- Automation = Compliance
- Action Rules = Self-Correcting
- Systematic = Easy Verification

The graph measures the likelihood that inclusion goals will be exceeded or fall short.