Integrated Emissions Data Management Framework™ for Government and Corporate GHG Data Management, Modeling, and Reporting

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Presentation Outline

- Integrated Emissions Data Management (IEDM) Framework background, scope, users, reason for development
- Closing the GHG emissions data management gap with the IEDM Framework
- Summary of the IEDM Framework pillars and layers
- Summary of the IEDM Framework supporting IT Tiers
- Business and IT/Data benefits of the Framework
- Conclusions
- Questions
Background

- Climate change action driving development of many mandatory and voluntary greenhouse gas (GHG) emissions reduction programs
- Climate change action driving shareholder and investment community activism
- GHG compliance requirements growing rapidly
- Effective GHG data management required for program success
What Is the IEDM Framework?

The Framework is a Tool and Guideline to:

- Effectively manage the explosive growth in GHG Emissions Data
- Facilitate adherence to climate change Policies
- Facilitate adherence to globally accepted Standards and Best Practices
Who can use the IEDM Framework?

- Government agencies involved in climate change action
- Corporations participating in mandatory or voluntary GHG emissions programs
- Practitioners, verifiers, and implementers who are preparing:
  - Governments to administer GHG programs
  - Corporations to participate in GHG programs
  - Entities to report, verify, and trade GHG emissions
Why is the IEDM Framework Necessary?

- The IEDM Framework incorporates global GHG emissions Policies, Standards, and Guidelines

- *GHG policies and guidelines do not address the intricacies of data management* – the IEDM Framework provides guidance to entities who collect, analyze and report GHG emissions data

- The IEDM Framework facilitates more precise management of GHG inventories and emissions reductions data
The GHG Emissions Data Management Gap

GHG Policies and Standards do not address the intricacies of Data Management
The IEDM Framework™ - A Summarized View

Cauter Group Integrated Emissions Data Management Framework™

Greenhouse gas (GHG) emissions regulations, carbon market trading, and sustainability reporting require the precise management of emissions data. The IEDM Framework™ provides the base for integration of GHG emissions data management across all operations to deliver the maximum emissions data exploitation, reporting intelligence, and carbon trading profit potential.

CORPORATE AND GOVERNMENT ENTITIES FOCUS

INTEGRATION OF EXISTING INFORMATION TECHNOLOGY INVESTMENTS

GHG Emissions Data Management

- Project details, methods, protocols, baseline methodologies (approved, non-approved)
- Estimates (actual, baseline, leakage), Factors & sampling
- Other: GIS, geospatial data, surrogate, soils data (I.U.I.KF)

GHG Emissions / Emissions Reduction Verification Data Management

- Emissions data, emissions reduction data, project details, facility details
- Baseline methodologies and protocols information, calculations, assumptions and emission factors
- Sampling, estimations and uncertainty analysis data
- GHG systems audit data
- Evaluation and verification results data

GHG Emissions Certification Data Management

- Emissions data, emission reduction verification project data, project details (as needed)
- Issuance of credits request data, supporting documentation, protocols, etc.
- Issuance of credits data, tracking of credits data
- Related accounting data, release and expiration data

Carbon Market Trading Data Management

- Certification data (where needed)
- Credit type data, Credits and offset tracking data
- Credits and offset trading activity data
- Valuation data, CMT position data
- Risk and exposure management data, scenario data

INTEGRATION OF NEW & ENHANCED INFORMATION TECHNOLOGY INVESTMENTS

Consultative and Collaborative Input Foundation, Extensive Contributions to Climate Change Policy

International and National GHG Registries & Inventory Systems

International Standards & Data Governance

- ISO 14064
- GHG Protocol
- G43 (draft) Environmental Index
- IASB

Data governance standards

- Communication & data exchange protocols / XML
- Scalability & GRID computing
- Interoperability - uncode

Investment, Insurance, & Shareholder Disclosure
10 Modules
(2 Pillars Support 8 Layers)

- **Framework focus:** both Corporate and Government
- **2 Pillars:** Climate Change Policy Pillar and International GHG Standards and Data Governance Pillar
- **IT Investments Integration:** Existing IT Investments and New and Enhanced IT Investments
- **Data Management Layers:**
  1. GHG Emissions
  2. GHG Emissions / Emissions Reduction Verification
  3. GHG Emissions Certification
  4. Carbon Market Trading
- **Framework foundation:** Consultative and collaborative input, extensive contributions to climate change policy
Focus: Both Corporate and Government Entities can use the Framework

- **Framework Scope**
  - Corporations
  - Government agencies

- **Framework Pillars**
  make it easy for participants to adhere to GHG Regulations, Standards, Guidelines
The Pillars – Regulations and Standards

- Climate change and GHG emissions regulation & policy
- International GHG standards and data governance
- Supported by ongoing consultation, collaboration, and contributions
Support for Climate Change and GHG Emissions Policy and Regulation

- **Global focus, constantly updated**
- International, regional, and state programs – Kyoto Protocol and specific national programs, RGGI, ++
- Recognizes various mechanisms and cap-and-trade programs – EU-ETS, RGGI, ++
Recognition of International GHG Standards and Guidelines

GHG Emissions Reduction Mitigation Efforts Driving Standards Development

- World Business Council for Sustainable Development and World Resources Institute
  - GHG Protocol
- International Standards Organization
  - ISO 14064
- Global Reporting Initiative
  - Sustainability Reporting Guidelines
- International Accounting Standards Board
  - IFRIC 3 withdrawn, new guidance upcoming
Incorporation of Data Governance Standards

- **Data Exchange Standards**
  - International Transaction Log (ITL) DES

- **Interoperability**
  - UNICODE
  - XML

- **Communications**
  - Web Services
The Data Management Layers

- Fundamental to the framework
- Incorporate GHG policies, standards and guidelines from the Pillars
- Modular
  - Avoid data redundancy and facilitates integration
  - Entities combine layers as required
GHG Emissions Data Management

- Provides Guidance and IT Considerations for:
  - Measurement, Monitoring, and Modeling
  - GHG Inventories
  - Emissions Reductions
  - Reporting

- Facilitates Specialized Tasks
  - Developing Emissions Factors, Surrogates
  - Scenario Emissions Modeling, GIS data analysis

- Ensures accurate and consistent data gathering, analysis, and reporting
GHG Emissions and Emissions Reduction Verification Data Management

- Provides guidance to manage emissions reduction and verification data
- Business and IT basis for internal GHG verification protocol and processes
- Prepares entities and projects for third-party GHG verification
- Improves data accuracy and data quality by integrating with GHG Emissions Data Management Layer
GHG Emissions Certification Data Management

- Manages issued Credits and Allowances
  - *Kyoto* e.g. CERs, ERUs, AAUs
  - *Non-Kyoto* e.g. RGGI, other Aggregators
- Facilitates management of discrepancies between expected and verified reductions
- Can be used on its own by Certifiers
Carbon Market Trading
Data Management

- Manages Emissions Trading
  - Investments and valuations
  - Credit and Offset Trading activity and reporting, emissions trading risk management
- Recognizes tradable credits from multiple sources
- Ensures traceability of credits from origination to present
Information Technology Investments

- Recognizes the value of existing IT Investments
- Provides guidance to enhance existing and develop new systems
- Driven by policies, guidelines, standards, and data governance from the Pillars
- Supported by additional IT Tiers
Integrating Existing IT Investments

- Governments and corporations have already made significant investments in Information Technology – these must be effectively integrated into GHG emissions strategy and EMIS

- Directly incorporates existing IT investments into the IEDM Framework

- Seeks to maximize system re-use by applying techniques such as defining Programming API’s etc…
Integrating New and Enhanced IT Investments

- Provides guidance for GHG data and systems development

- Policies, standards, and guidelines from the Pillars help to drive:
  - GHG emissions data strategy
  - EMIS requirements assessments
Consultation, Collaboration, Contribution

- IEDM Framework foundation
- Policies remain under development
  - Regional
  - National
  - International
- Recognizes direct contributions to global climate change policy and guidelines
Supporting IEDM Framework Tiers

- Information Technology Tier
  - Ensure System Scalability
  - Apply Best Practices

- GHG Emissions Database Framework Tier
  - Meta Data
  - Reference and Indicative Data
  - Volatile Data (Measurements, Transactions)
  - Operational Data
Scalability: GRID Computing Example
Data Quality, Accuracy, & Exploitation: IT Tier Example

- **External Data**
- **Consolidation and Enrichment Layer**
  - Extract, transform and load for data management - data warehousing
  - Data exploitation layers and standard business rules intelligence
- **Multiple Internal Data Sources Access** - data access engines - to systems, spreadsheets, field reports

To additional I EDM IT Tier layers - can be implemented in stages as required by the entity.

Main stages for data quality, accuracy and consistency.
Business Benefits of IEDM Framework

- Supports Regulation, Standards and Guidelines
  - Supports constantly changing GHG policy via Pillars
  - Anticipates and reveals new and emerging GHG regulation and standards by recognizing ongoing consultations, collaborations and contributions

- Applicable to Voluntary Programs
  - Prepares entities for entry into mandatory GHG programs and emissions trading markets
IT/Data Benefits of IEDM Framework

- **Information Technology**
  - Maximizes and integrates existing IT investments
  - Provides guidance for new IT investments and EMIS

- **GHG Data**
  - Harmonizes data across disparate platforms, facilities and functions – Monitoring, Measurement, Modeling, Verification, Trading
  - Improves data accuracy, consistency, and completeness for GHG quantification and verification
  - Eliminates data redundancies through functional and system integration
Conclusions

- The IEDM Framework is a unique guidance tool to aid implementers with:
  - Conducting Needs Assessments
  - Maximizing existing IT Investments, defining incoming IT enhancements and new systems
  - Managing complex layers of GHG Emissions Data

- Adherence to policies and standards is key to any entity that manages GHG emissions data
  - These GHG policies, regulations, and standards are fundamental to the IEDM Framework
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