# IRI Data Protector Suite

**IRI FieldShield**
PII / PHI Classification & Masking

**IRI RowGen**
Smart Test Data Generation

**IRI CellShield**
PII / PHI Search & Mask in Excel

**IRI Chakra Max**
DB Firewall & Dynamic Data Masking

database
TRENDS AND APPLICATIONS
TREND-SETTING PRODUCTS for 2018

# IRI, The CoSort Company

## Vendor Background

- Specializing in data management and data protection

- Innovator in data manipulation functionality and speed

- $\frac{7}{8}$ products share 1 metadata and Eclipse GUI

- Privately owned since 1978

- Headquartered 1 hour southeast of Orlando, FL

- Resellers in more than 40 international cities

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Total Data Management

# Selected IRI Data Masking Customers

Most IRI customers process and protect PII in databases, flat-files, or "big data" repositories, including Hadoop or NoSQL DBs. Others are building or testing applications. IRI's data masking consultants and clients are mostly in healthcare and BFSI.

# IRI Data Manager Suite

## IRI CoSort
### Sort, Transform & Report

Speed or replace batch, BI, ETL, sort, and SQL programs

- Filter, join, aggregate, pivot, cleanse, lookup, calc, etc.
- Map, migrate, federate, and replicate data from 150 sources
- Segment data, capture changes, report details / summaries
- Analyze changing dimensions, support complex transforms

## IRI FACT
### Fast Extract for DBs

Speed RDBMS unloads for archival, migration, reorg, and ETL

- Extract tables to flat files in parallel using SQL queries
- Convert and re-format to change data types and layouts
- Create the data definitions for IRI software and DB loads
- Pipe to CoSort and DB loaders for faster reorg and ETL
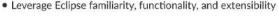
## IRI NextForm
### Data, File & Database Migration

Unlock data and move between apps, DBs, and platforms

- Convert, federate, remap, and replicate legacy data
- Migrate data between databases and create new tables
- Change file formats, data types, and endian conditions
- Find, extract, and structure data in dark data documents

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## IRI Voracity
### An Insatiable Appetite for Data

*eclipse*

Consolidate tools and tasks to process, protect, prototype, present

- Discover, define, and manage data in legacy and new sources
- Combine data integration, migration, governance, and analytics
- Exploit CoSort and Hadoop engines for optimum throughput
- Leverage Eclipse familiarity, functionality, and extensibility

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# IRI Data Protector Suite

## IRI FieldShield
### PII / PHI Classification & Masking

Comply with privacy laws, nullify breaches, govern data

- Search, profile, and classify sensitive data in DBs and files
- Encrypt, hash, redact, pseudonymize, randomize, tokenize
- Apply cross-table rules to save time and referential integrity
- Create an XML audit log of each job to verify compliance

## IRI CellShield
### PII / PHI Search & Mask in Excel

Profile and de-identify PAN/PHI/PII in Excel spreadsheets

- Define or use patterns to search for sensitive data
- Locate, report, and open all found ranges in the LAN
- Click to encrypt, mask, or pseudonymize data directly
- Auto-log protections to verify privacy law compliance

## IRI RowGen
### Smart Test Data Generation

Prototype DBs and ETL, stress-test, outsource, benchmark

- Use real data models and formats, not production data
- Combine generation and selection, create new formats
- Preserve referential integrity and frequency distributions
- Feed test DBs, files, and custom reports simultaneously

## IRI Chakra Max
### DB Firewall & Dynamic Data Masking

Define, monitor, block, and audit DB activity using RBAC

- High-volume, data-centric audit and protection (DCAP)
- Monitor, block, alert, and log users in real-time
- Low-impact on DB performance and availability
- Scan for, and dynamically mask, sensitive data

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## IRI
### Total Data Management

**CELEBRATING**
**40 YEARS**
*2018*
The CoSort Company

## IRI
### Total Data Management

# Sources

**Big Data**
cloudera MAPR Hortonworks Spark HIVE Pivotal SAP HANA NETEZZA

**Call Detail Records**
ASN.1 Formats

**Cloud & SaaS**
amazon web services Microsoft Azure salesforce HubSpot Marketo eloqua

**Databases**
ORACLE DATABASE IBM DB2 MySQL TERADATA mongoDB Microsoft SQL Server DataBase SYBASE DATASTAX ALTIBASE

**Files & Pipes**
COBOL, CSV, LDIF, LS-RS-VS, MFVL, Text, VB, Vision, XML

**Mainframe**
Adabas, Datacom, IDMS, IMS, ISAM, Pick, Unidata, VSAM, etc.

**Semi & Unstructured**
PDF O X W P

**Other Sources**
Custom Apps, ETL/ELT Tools, Packaged Apps, Web Logs

# DISCOVER
Data Classification
Dark Data Search
DB & File Profiling
ER Diagramming
Metadata Definition
Metadata Forensics
Multi-Method Search

## INTEGRATE
Slowly Changing Dimensions
Public/Private Mashups
Change Data Capture
Fast DB Un/Load
Data Federation
One-Pass ETL

## MIGRATE
Incremental Replication
Data & File Types
Endianness
Databases
JCL Sorts
ETL Jobs

## IRI Voracity
An Insatiable Appetite for Data

## GOVERN
Data Quality
Data Masking
Data Lineage
Data Reconciliation
Test Data Generation
Metadata Management

## ANALYZE
Embedded BI
Cloud Dashboard
Data Preparation
Predictive Analytics
BIRT & Splunk Feeds
Clickstream Analytics

## DESIGN
Wizards with Rules
Graphical Dialogs
Scripts with Outlines
Workflow Palettes
Mapping Diagrams
Metadata Form Editors
ADS Mapping Manager

## DEPLOY
CoSort CLI/API (SMP)
MapReduce (Grid)
Spark (In-Memory)
Storm (Streaming)
Tez (Batch)
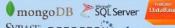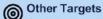Java, Kafka, SQL
Eclipse & Other Job Launchers

# Targets

**Big Data**
cloudera MAPR Hortonworks Spark HIVE Pivotal SAP HANA NETEZZA

**BI & Analytic Tools**
SAP BusinessObjects BIRT IBM Cognos MicroStrategy ORACLE BUSINESS INTELLIGENCE Qlik R splunk> Spotfire tableau

**Cloud & SaaS**
amazon web services Microsoft Azure salesforce HubSpot Marketo eloqua

**Custom Reports**
Detail & summary reports

**Databases**
ORACLE DATABASE IBM DB2 MySQL TERADATA mongoDB Microsoft SQL Server DataBase SYBASE DATASTAX ALTIBASE

**Files & Pipes**
COBOL, CSV, LDIF, LS-RS-VS, MFVL, Text, VB, Vision, XML

**Other Targets**
Custom Apps, Data & SpreadMarts, ETL/ELT Tools, Federated Views, Packaged Apps, Test Suites

N PartnerNet SILVER PARTNER Novell | intel Software Partner | IBM Business Partner | Business Partner hp | SOLUSI 247 24 hours 7 days integrated ICT solution | AnalytiXDS | eclipse | msdn | MICRO FOCUS | TRILLIUM SOFTWARE A Harte Hanks Company | redhat | ORACLE PARTNERNETWORK

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# IRI FieldShield

PII / PHI Classification & Masking

*IRI Data Protector Suite*

# What FieldShield Does

- Connect and interact with multiple source and target repositories, on-prem or cloud

- Discover and classify sensitive data in DB, flat-file, and dark-data sources

- Secure fields with PII, PHI, etc. via 12 built-in masking function categories

- Address multiple protections and recipients in one job script, one I/O

- Apply protection rules across tables and preserve referential integrity

- Support conditional security, i.e. based on patterns, values, or ranges

- Specify protections and layouts in Eclipse GUI and portable 4GL job scripts

- Integrate with DB apps via ODBC and .NET and Java SDK for dynamic data masking

- Retain data realism (e.g. FPE and pseudonyms) for testing and outsourcing

- Operate concurrently in big data EGL, migration, sub-setting, and BI/analytic jobs

- Log job and system runtime detail to an XML audit file to verify compliance

- Within Voracity, support streaming input and Hadoop execution paradigms

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# FieldShield Data Sources (Native)

| | | | |
|---|---|---|---|
| Acucobol Vision | Delimited | MaxDB | SQL Server |
| Altibase (FACT) | Derby (WB) | Mongo (WB) | SQLite |
| ASN.1 TAP3 | ESDS | MF-ISAM | Sybase ASA/E & IQ |
| BIRT DB (WB) | Excel (WB) | WF Var. Length | Tibero (WB) |
| BIRT Hive (WB) | ELF web logs | MySQL | Teradata (WB) |
| BIRT JDBC (WB) | Fixed | Oracle | Text |
| BIRT POJO (WB) | Heap / print | Outlook (WB) | UTF-8 & 16 |
| C-ISAM | HSQLDB (WB) | PDF (WB) | Variable Block |
| CLF web logs | IDX 3, 4 & 8 | PostgreSQL | Variable Sequential |
| CSV | Informix | Powerpoint (WB) | VSAM MVS (UniKix) |
| DB2 (UDB) | Ingres | Record Sequential | Web Services (WB) |
| DB2 for i5/OS (WB) | LDIF | RTF (WB) | Word (WB) |
| DB2 for z/OS (WB) | Line Sequential | SQL Anywhere | XML |

*FACT: requires IRI Fast Extract (FACT)*
*WB: requires IRI Workbench, the free Eclipse GUI for FieldShield, etc.*

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# FieldShield Data Sources (Legacy)

| | | | | | |
|---|---|---|---|---|---|
| Access | D3 | GA-Power 95, R91 | K-ISAM | Pathway | RMS |
| Adabas | Datacom | Gemstone | Knowledgeman | PDS | Reality/X |
| Advanced Pick | Dataflex | GENESIS | KSDS | PervasiveSQL | RRDS |
| ALLBASE | Db4o | Gigabase | Lotus | Pick/Pick64+ | SAP HANA |
| Alpha5 | dBase | H2 | Manman | PI-Open | Sequoia |
| Amazon RDS | Desktop Adapter | IDMS | Mentor / pro | Powerflex | Sharebase |
| Azure | DL/1 | IDS | MO | Powerhouse | Supra |
| BizTalk | DSM | Image | Model 204 | Progress | Terracotta |
| Cache | Enscribe | IMS | Mumps | QueryObject | Total |
| Clipper | Enterprise Adapter | Interbase | MyBase | rBase | Ultimate |
| Codasyl | FileMaker | Intersystems | Netezza | R83 | UltPlus |
| CorVision | Firebird | ISM | NonStop SQL | Rdb | Unidata |
| ConceptBase | Focus | Jasmine | ObjectStore | REALITY | Universe |
| D-ISAM | FoxPro | JBase | Paradox | Red Brick | VSAM VSE |

*Accessible via IRI partner (CONNX) J/ODBC drivers*

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# FieldShield Data Sources (Modern)

| | | | |
|---|---|---|---|
| Amazon EMR Hive | FinancialForce | Marketo | Pivotal Greenplum |
| Apache Cassandra | Force.com apps | MongoDB | Pivotal HD Hive |
| Apache Hadoop Hive | Hortonworks Hive | MS Dynamics CRM | Salesforce.com |
| Cloudera CDH Hive | Hubspot | MS SQL Azure | ServiceMAX |
| Cloudera Impala | Lightning Connect | Oracle Eloqua | Spark SQL |
| Database.com | MapR Hive | Oracle Service Cloud | Veeva CRM |

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# Sensitive Data Discovery - Multiple Wizards

FieldShield (and all IRI software) includes PII discovery capability, which includes cross-source data identification and classification, string (literal or dictionary), pattern, and fuzzy-logic searches, statistical reporting, and automatic metadata creation. Fit-for-purpose GUI wizards deliver:



- DB and file classification, with rule matcher libraries
- DB profiling and E-R diagramming
- Dark data discovery and structuring, with metadata reporting
- Flat-file statistical and value searching
- Structured data metadata discovery and definition

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# Static Data Masking Functions (1-3 of 12)

**De- & Re-Identification**

**Encryption & Decryption**

- For ASCII data
- Less secure
- Reversible

**Encoding & Decoding**

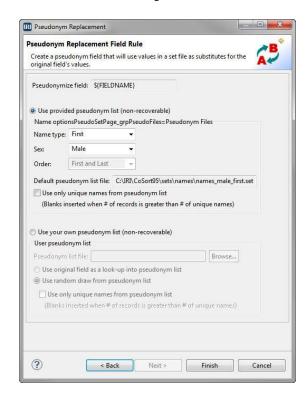- 3DES EBC & SSL
- AES-128 & -256 CBC
- AES-256 Format-Preserving
- GPG (PGP-compatible)
- FIPS-compliant OpenSSL
- Custom

- Converts binary to ASCII
- Supports base64 & hex
- Reversible

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# Static Data Masking Functions (4-6 of 12)

**Pseudonymization**

**Character Masking**

**Randomization**

- Provides realistic names
- Reversible lookup values
- Non-reversible selection

- Partial/full-field masking
- Conditional omission
- Non-reversible

- Random data generation
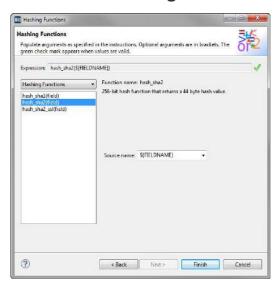- Random data selection
- Non-reversible
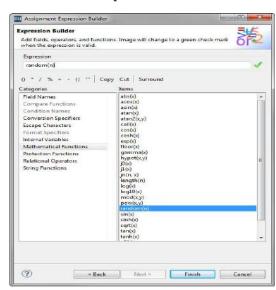
# Static Data Masking Functions (7-12 of 12)

| **Hashing** | **Expressions** | **String Manipulations** |



- SHA-1 & 2 cryptographic
- Returns hash of fieldstring
- Use for integrity checking

- Mathematical operations
- PCRE logic
- Custom blurring

- Find, replace, and add
- Reposition and trim
- Use INSTR information

**#10 Hashing**

Target layout declaration with or without selection logic

**#11 Tokenization**

DB-value substitute for PCI DSS

**#12 Custom Function**

User's field-level call

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# Mongo Masked



… and unmasked

# Masking et al in Hadoop, Too

Map once, deploy anywhere

# IRI Dynamic Data Masking Options

| Method | Operation |
|---|---|
| ODBC Select / Update | Apply protections with precision to any given column value(s) in qualifying row(s) |
| DB App Invocation | Use .NET or Java SDK library functions or system-call job scripts on the fly |
| *In-Situ* Redaction | User and SQL-specific full and partial column masking on query (Chakra Max) |
| Custom I/O Procedures | Drive real-time application data directly to/from FieldShield jobs in memory |
| Real-Time Processing | Hadoop Spark and Storm processing of dynamic input streams in Voracity |

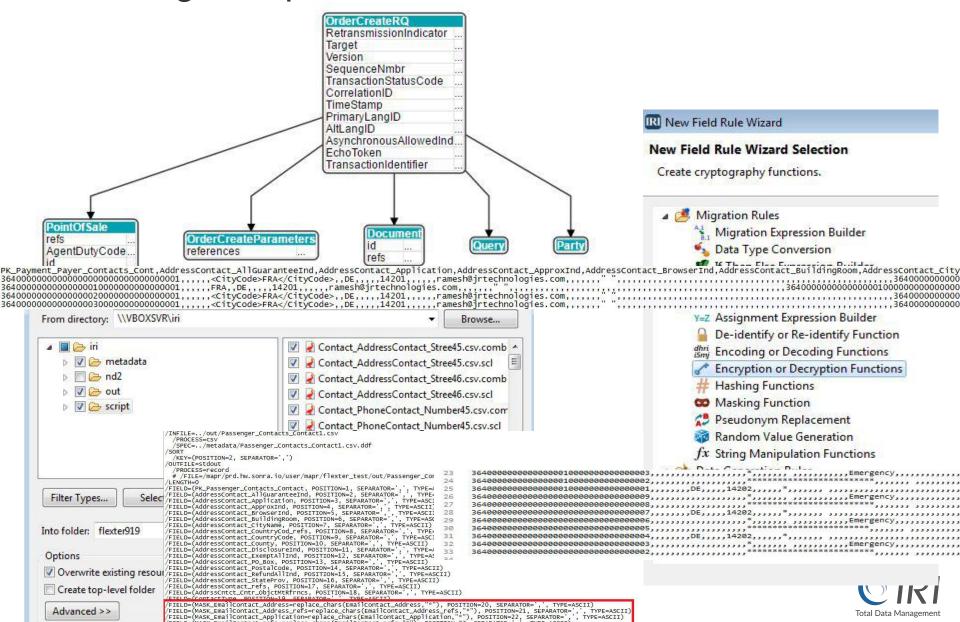# Encryption Key Management Options

1. Passphrase (key string) embedded in script
2. String as environment variable
3. String in (securable) key file
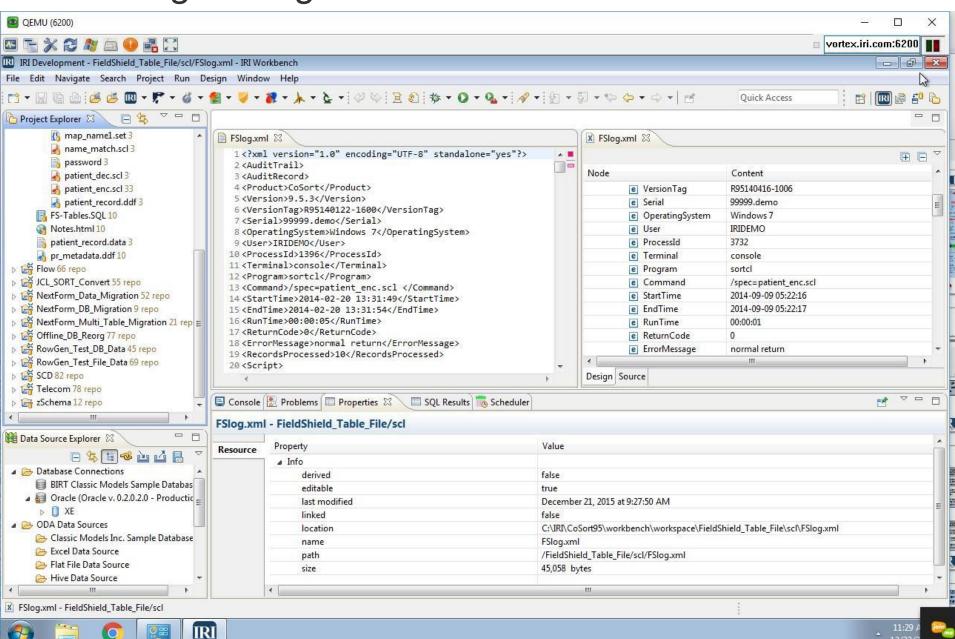4. Multi-factor authentication via Towsend Security Alliance Key Manager

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# Masking Complex XML (via Sonra Flexter pre-parsing, JSON next!)



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# Audit Log Management

# User Profiles

- Vertical industries and governmental agencies storing, processing, or outsourcing applications with sensitive data, such as:

  - Banks
  - Census / Tax
  - Defense

  - Health Care
  - Insurance
  - Schools

- Application, DB, and DW users handling sensitive data
- CISOs, compliance teams, consultants, IT managers, and solution architects

# Use Cases

**Tesco Bank/RBS UK**

- ○ Decrypt and re-encrypt fields in credit card migration and test files
- ○ Generate and manage encryption and user ID keys
- ○ Other projects protect 38,265 records per minute on Windows

**Accenture Singapore**

- ○ Design and run encryption and masking jobs on Linux servers
- ○ Secure PHI for the Ministry of Health Holdings (MOHH)'s Oracle DB
- ○ Row sequencing and job audits

**Medicx Media Solutions USA**

- ○ Encryption and hashing functions to PII and PHI in geo-medical consumer health databases
- ○ Exceeds HIPAA requirements in provisioning mScores$^{TM}$ data to digital and direct marketers

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# Key Differentiators

## Developer Support

- ○ Version controls
- ○ Master data definition
- ○ Secure key management
- ○ Project management (teaming)
- ○ SDK supports .NET and Java calls
- ○ Source data and metadata discovery
- ○ XML job audit logs (for verifying privacy law compliance)

## One-Stop-Shop

- ○ Extract, Transform, and Load (ETL)
- ○ Data and DB migration
- ○ Test data generation
- ○ Advanced BI
- ○ Reporting

## Price Performance

- ○ The data-centric security tool with:
  - ➜ The most sources
  - ➜ The most protection functions
  - ➜ The most target file formats
- ○ Fastest standalone protection software

## Ease-of-Use

- ○ Familiar Eclipse GUI
- ○ Self-documenting 4GL syntax
- ○ Easy management and modification of jobs/metadata

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# Competitive Advantages

### vs. IBM

- ○ FieldShield scripts simpler than Optim interoperability model and Javascript options
- ○ Seamless integration with more sources
- ○ More functions
- ○ Lower cost

### vs. Informatica

- ○ FieldShield DDM inclusive with product (compared to Informatica's upgrade)
- ○ More protection functions
- ○ Integration with Eclipse and Excel
- ○ Access to 4GL scripts
- ○ Lower cost

### vs. CA (Grid-Tools)

- ○ FieldShield's CoSort engine is faster than Grid-Tool's Fast Data Masking
- ○ Tight integration with data profiling, ETL, data quality, and BI operations
- ○ Multi-target/format options
- ○ Lower cost

### vs. GRT

- ○ FieldShield has more masking and encryption functions
- ○ Hash, decode, and pseudonymize functions
- ○ Faster and more extensible in the IRI Workbench IDE
- ○ Lower cost

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# IRI CellShield
## PII / PHI Search & Mask in Excel
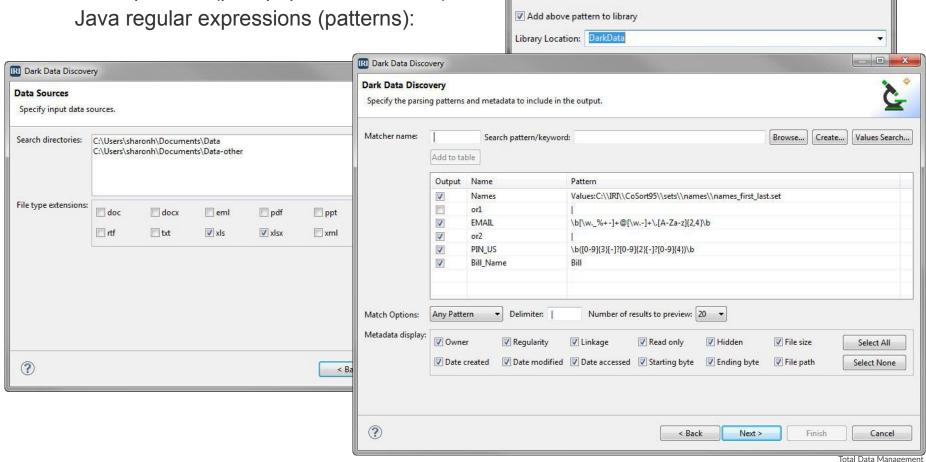
*IRI Data Protector Suite*

# What CellShield Does

- Discover, report, and mask PII and perform audit actions in Excel 2010 & 2013

- Search & secure spreadsheets (and other dark data) throughout a LAN

- Provide common and allow new search pattern definitions for PII formats

- Search for strings in a dictionary, and find/fix PII *floating* in cells

- Support reuse and sharing of patterns in project or cloud repositories

- Generate a report of all patterns found and open it for action in a worksheet

- Open applicable worksheets and highlight the located ranges for protection

- Click to encrypt, mask, or pseudonymize with supplied functions and options

- Reveal data with the decryption key, or if reversible pseudonym was used

- Overlay results directly into the affected cells or in another worksheet

- Move between or bulk-remediate all identified worksheets and ranges

- Auto-insert protection details into an un-editable audit column in the report

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# CellShield PII Discovery

The dark data profiling wizard in the IRI
Workbench searches network-wide for
sensitive data in spreadsheets based on
user-specified (plus popular and saved)
Java regular expressions (patterns):

**New Pattern**
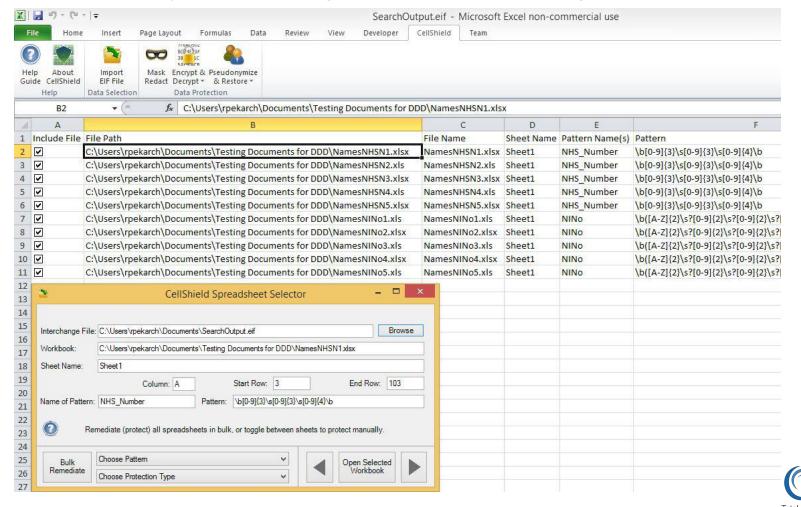
New Pattern
Create a regular expression pattern

Name: EMAIL
Description: Email
Pattern: \b[\w._%+-]+@[\w.-]+\.[A-Za-z]{2,4}\b

Browse Common Patterns...

☑ Add above pattern to library

Library Location: DarkData

**Dark Data Discovery**

Data Sources
Specify input data sources.

Search directories: C:\Users\sharonh\Documents\Data
C:\Users\sharonh\Documents\Data-other

File type extensions:
☐ doc   ☐ docx   ☐ eml   ☐ pdf   ☐ ppt
☐ rtf   ☐ txt   ☑ xls   ☑ xlsx   ☐ xml

**Dark Data Discovery**

Dark Data Discovery
Specify the parsing patterns and metadata to include in the output.

Matcher name: [____]   Search pattern/keyword: [_____]   Browse...  Create...  Values Search...

Add to table

| Output | Name | Pattern |
|--------|------|---------|
| ☑ | Names | Values:C:\\IRI\\CoSort95\\sets\\names\\names_first_last.set |
| ☐ | or1 | \| |
| ☑ | EMAIL | \b[\w._%+-]+@[\w.-]+\.[A-Za-z]{2,4}\b |
| ☑ | or2 | \| |
| ☑ | PIN_US | \b([0-9]{3}[-]?[0-9]{2}[-]?[0-9]{4})\b |
| ☑ | Bill_Name | Bill |

Match Options: Any Pattern ▼   Delimiter: [ | ]   Number of results to preview: 20 ▼

Metadata display:
☑ Owner   ☑ Regularity   ☑ Linkage   ☑ Read only   ☑ Hidden   ☑ File size   [Select All]
☑ Date created   ☑ Date modified   ☑ Date accessed   ☑ Starting byte   ☑ Ending byte   ☑ File path   [Select None]

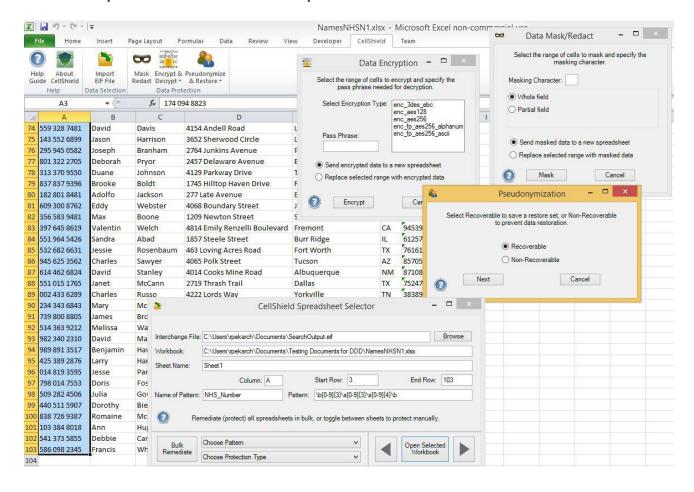< Back   Next >   Finish   Cancel

# CellShield Reporting

The report produced by the profiling wizard opens in a dynamic worksheet supported by an action dialog for protection and auditing activities
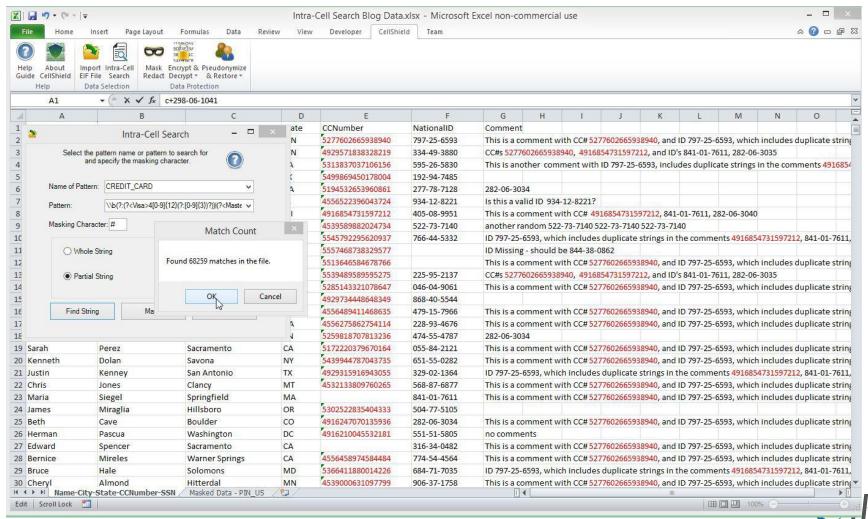
# CellShield Protection

Perform point-and-click encryption and decryption, masking (full or partial cell), or pseudonymization (reversible and nonreversible) of the applicable ranges within the spreadsheets in the report:
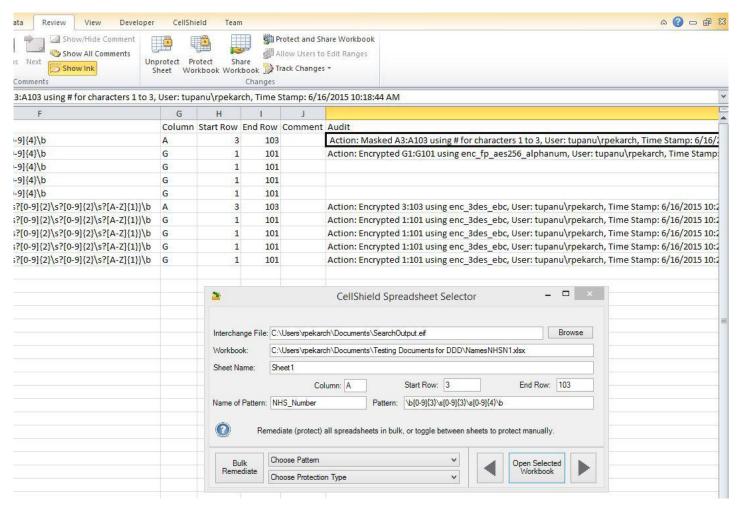
# CellShield Intra-Cell Search & Mask

Feature finds and fixes floating PII, *ad hoc*, or *en masse*



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# CellShield Auditing

An uneditable log entry for the protection applied to each pattern identified in the report is automatically appended on each action:
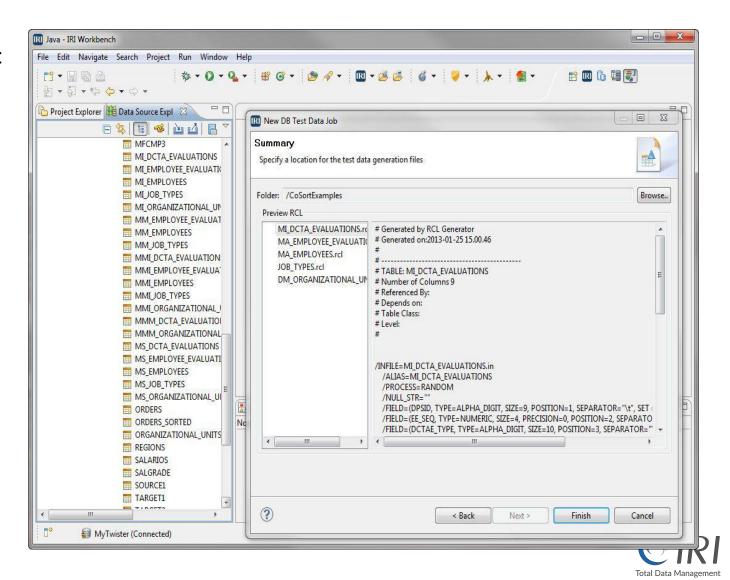
# IRI RowGen
## Smart Test Data Generation

*IRI Data Protector Suite*

# What RowGen Does

- Create synthetic but realistic random and random-real test data simultaneously

- Improve DB prototypes, application quality, benchmarking, and outsourced operations

- Use standard DB DDL, production file, and custom metadata to define layouts

- Preserve structural and referential integrity of real EDW DBs for testing

- Produce data in any types, structure, volumes, value ranges, and if condition

- Synthesize composite data values and custom (master) data formats

- Generate computationally valid and invalid NID (Codice Fiscale, etc.) SSNs, and CCNs

- Set and graph test data value distributions (linear, normal, random, etc.)

- Apply common attribute rules (like lookups) rules for pattern-matched field names

- Filter, transform, and pre-sort test data while it's being generated

- Write loader metadata and perform direct path loads for test DB populations

- Build test flat-file and custom/structured detail and summary report targets

- Subset and mask databases automatically for test purposes

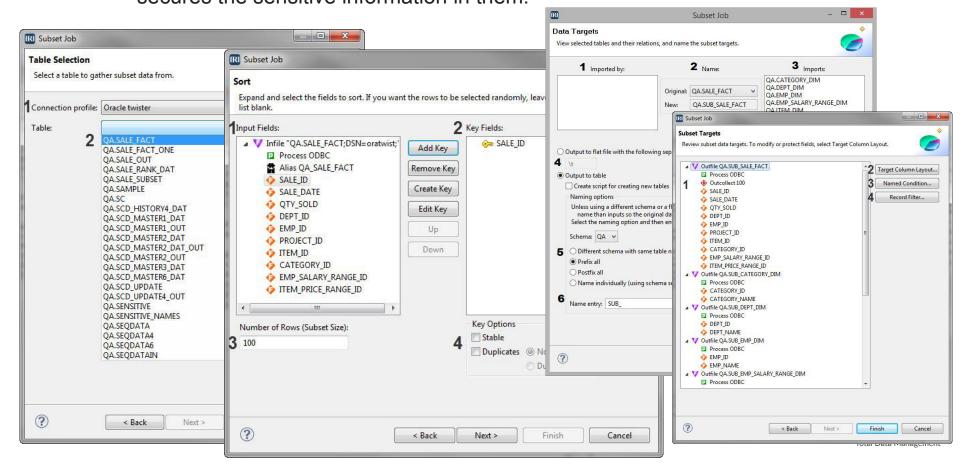- Provide SDK functions for generating test data in Java apps and Hadoop

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# Use Existing Data Models and Metadata

Build Test Data for:

- ○ CoSort
- ○ DataStage
- ○ DB2
- ○ Hadoop
- ○ Informatica
- ○ NoSQL DBs
- ○ Oracle
- ○ SQL Server
- ○ Sybase
- ○ Teradata
- ○ CSV
- ○ XML
- ○ LDIF
- ○ COBOL

# DB Subsetting with the Masking Option

RowGen's subsetting and test data generation wizards facilitate DB and EDW prototyping. Smaller, referentially-correct copies of larger table extracts ensure production data is safe and test data is realistic. Masking secures the sensitive information in them.

# User Profiles

Anyone doing DB testing, app development, stress-testing, or benchmarking, including:

- ○ Developers (programmers)
- ○ DBAs and DW (ETL) architects
- ○ Analysts and consultants

# Use Cases

**Bank of Montreal**

- ○ Generates safe, realistic 20GB Oracles tables with RI for query testing

**MasterCard Peru**

- ○ Synthesizes PAN and PII in files to support OLTP and app testing

**Transitive UK**

- ○ Simultaneously creates and transforms data to test cross-OS virtualization

# Key Differentiators

1. Big data generation and population performance

    (embedded CoSort pre-sorting engine speeds bulk loads)

2. Synthetic data that's broader and safer than real data

3. Concurrent test data manipulation and reporting

4. Familiar Eclipse IDE and simple, portable, modifiable test data

    generation and auto-built DB loader scripts

5. Metadata compatibility with IRI DM

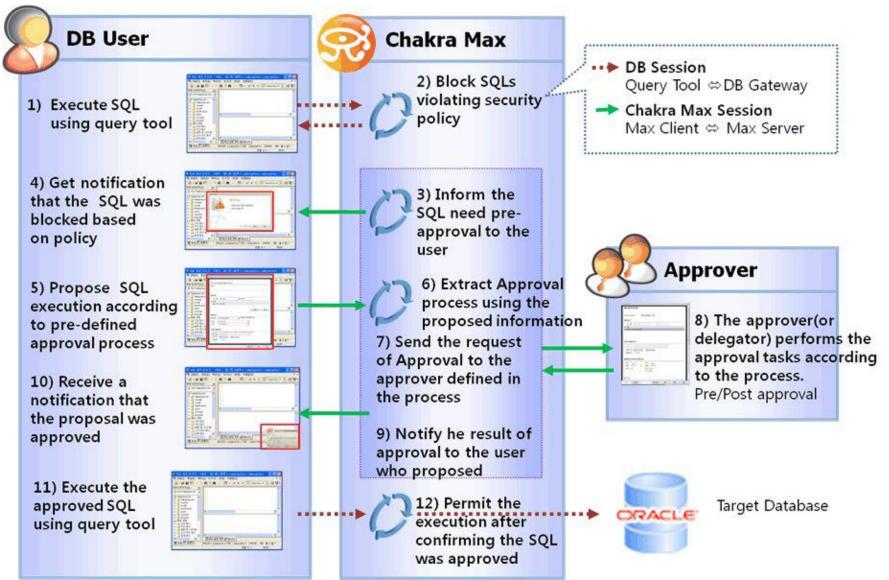    (and third-party ETL, BI, etc. platforms via AMM/MIMB)

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# IRI Chakra Max
## DB Firewall & Dynamic Data Masking

*IRI Data Protector Suite*
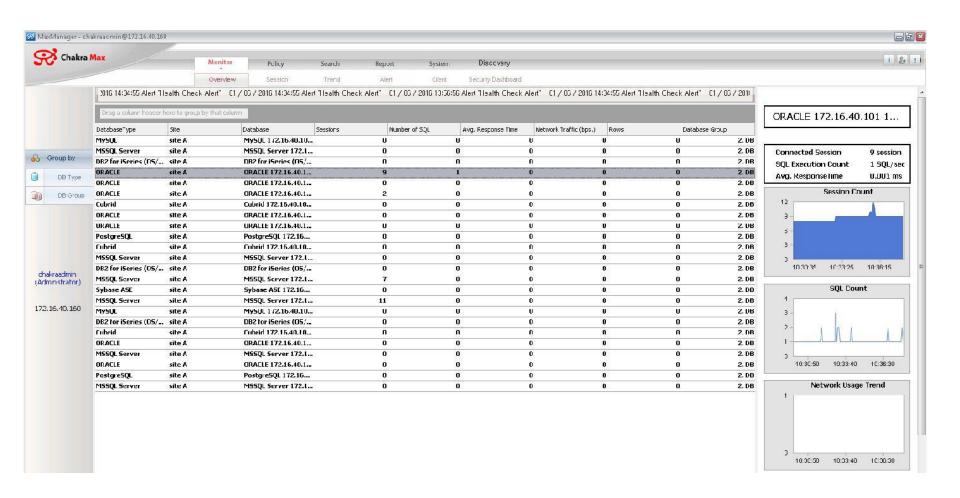
# What Chakra Max Does

- High-volume, data-centric audit and protection (DCAP) for 20 different databases

- Monitor, block, alert, and log users and traffic in real-time without impacting

    DB performance or availability

- Control DB access and permissible SQL executions by user and rule

- *Mask data dynamically* with full or partial field value redaction

- Apply policies across multiple DB instances at once

- PII access logging

- ISO 27001-compliant activity reporting and log analysis

- Uses a 3-tier Web Application Server (WAS) agent to collect packets between the client

    and DB, and it monitors and controls them

IRI
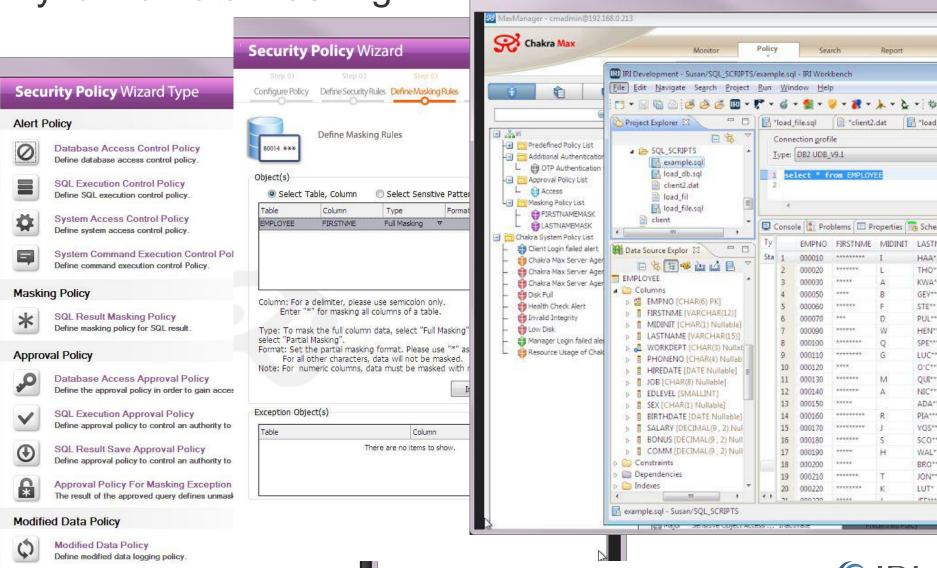Total Data Management

# Chakra Max Overview

# Real-Time Monitoring & Auditing

# Dynamic Data Masking

# User Profiles

- Anyone with databases containing PAN, PII, PHI, or other sensitive information

- Companies needing a standard multi-source DCAP solution

- Businesses requiring central and differential control over DB access

- Anyone needing real-time DB monitoring and alerting

# Use Cases

**Hankook Performance Tires**

- Chose Chakra Max's for scalability and low-impact on performance

**LG U+**

- Secures access to PII in customer DBs across mobile services network

**University of Maryland Medical Center**

- Uses DDM and secure audit log facilities for PHI protection
  and compliance verification

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Total Data Management

# Key Differentiators

### Performance

- ○ Most stable and best-performing DCAP solution for high-traffic volume environments
- ○ Firewall thousands of DBs at once
- ○ 100k SQL/second monitor speed
- ○ 10k-25k SQL/second audit speed
- ○ Low-impact

### Interoperability

- ○ Support for 20 different DBs on Linux, Unix, and Windows platforms
- ○ Extensible with IRI Voracity
  - ➡ Discount for bundled purchase
  - ➡ Enables all-in-one data discovery, integration, migration, governance, and analytics

### Capability

- ○ User-level access and execution privileges
- ○ DDM without changing original DB content
- ○ Monitors all login attempts, transaction commands, and results sets
- ○ Real-time logging
- ○ Automated reports
- ○ 40 formats for printing
- ○ 14 formats for saving

### Compliance

- ○ Internal and data privacy law compliance
- ○ Powerful and flexible auditing facilities for both real-time alerts and logging and forensic investigation of the logs
- ○ Complete audit history
- ○ Automatic backups
- ○ Post-deletion restore capabilities

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