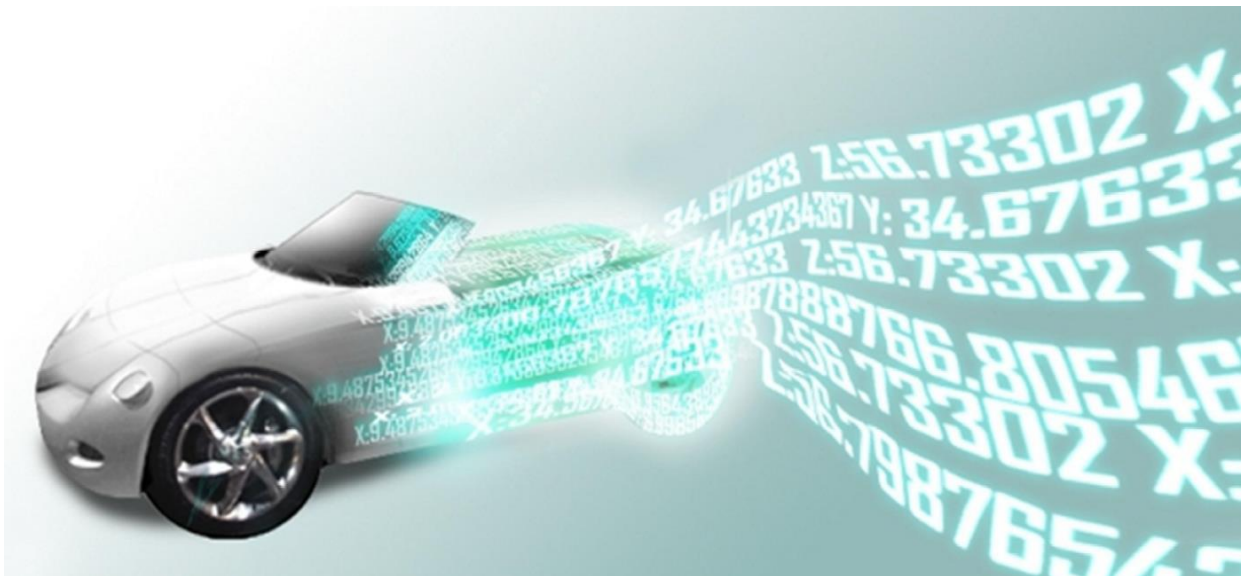


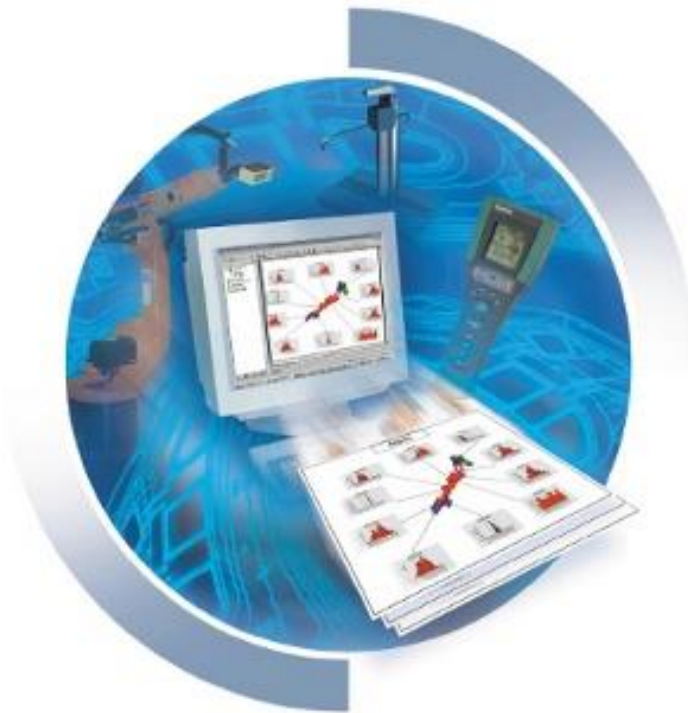


ATS International B.V.



# Application Overview





**CM4D** is a Dimensional Data Management solution that helps product manufacturers produce rich graphical reporting for quality analysis. CM4D accepts data from inspection devices on the plant floor and translates that data into a format that can be imported into the CM4D database where it is coordinated with the associated 3D image, imported from CAD. CM4D then uses the data and 3D model to create charts and graphs to display the information in an easy-to-read reporting format, which allows for quick analysis and decision making by appropriate personnel. A wealth of business tools within CM4D gives the user many powerful reporting options.

### **Benefits**

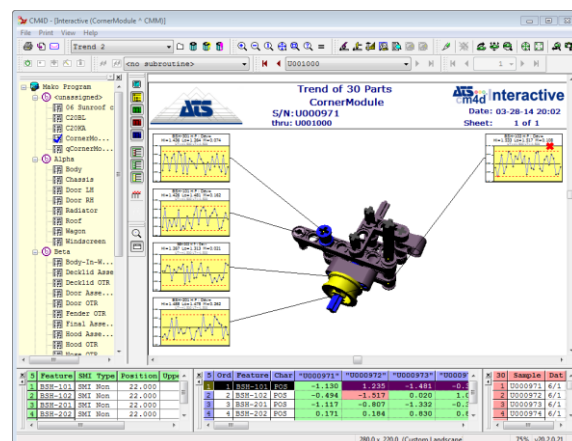
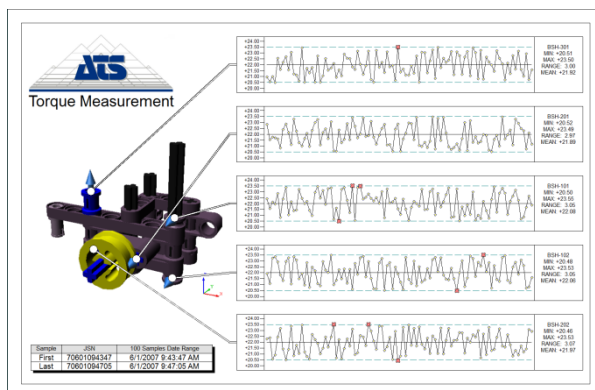
- Make Timely and Accurate Decisions -
- Perform Root Cause Analysis -
- Allocate Engineering Resources More Effectively -
- Enhance Global Coordination -
- Reduce Buyoff Time and Effort -
- Reduce Scrap and Rework -
- Improve Quality and Consistency -



## Data Collection

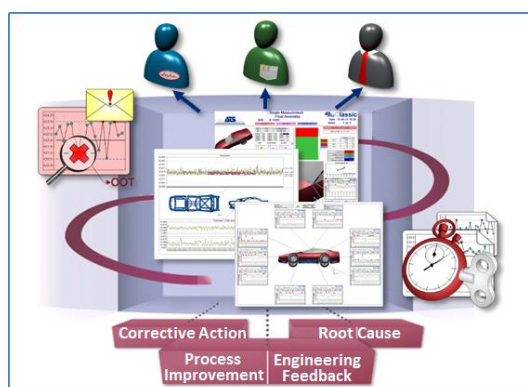
CM4D is designed to work with any dimensional data, whether it's Variation Simulation Results, Datamye, Perceptron, LaserTracker, LMI, Zeiss, Hexagon, LK, Nikon, or Faro.

CM4D's DataSmith module is a universal translator that collects and stores your dimensional data in a relational database to allow quick and easy access for reporting and analysis.

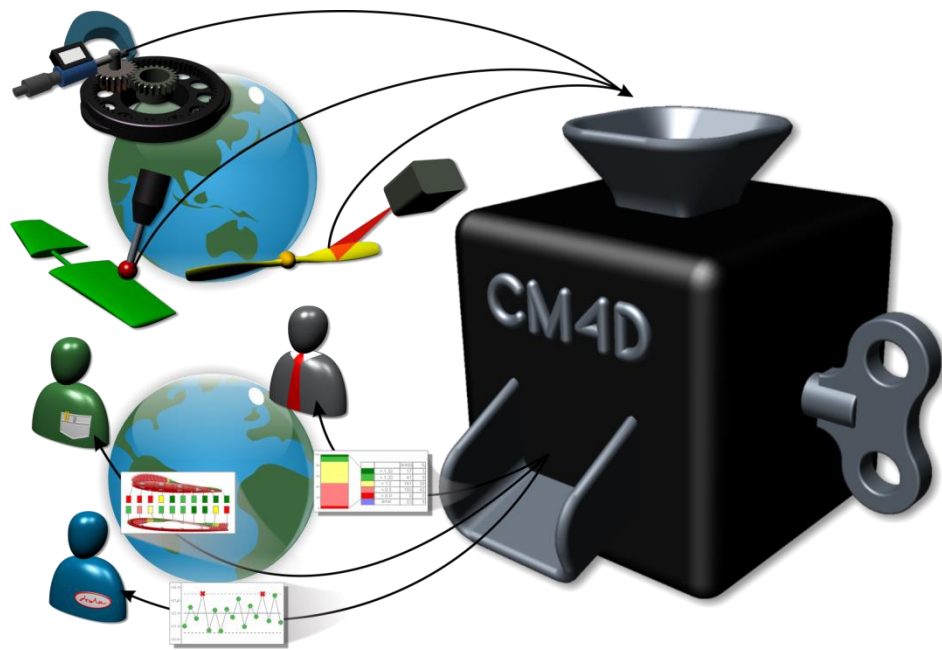


## Reporting

The key to solving any variation issue lies in the ability to visualize and analyze measurement data as quickly as it comes in. With CM4D, measurement data is dynamically associated with a representation of the CAD product model, processed by a powerful analysis engine, and formatted into reports featuring various charts and graphs for easy understanding and problem solving. With nearly infinite customization possibilities, CM4D can report your data in a multitude of formats, with automatic database population and retrieval.



- Web Publishing and Analysis -
- Relational Database -
- 100% Reporting Automation -
- Root Cause Analysis Reports -
- Comprehensive Statistics -
- Enterprise-Wide Reporting –
- User-Defined Reports -



## Automated Process

CM4D offers a fully automated process whereby inspection data output from any data collection device is automatically processed into the CM4D database, consolidating all your dimensional inspection data enterprise wide. Web reports are then automatically generated with the new data for immediate viewing, for a truly comprehensive data management and reporting solution.

1. Data collection device outputs new inspection data
2. New data is automatically processed into the CM4D database
3. Reports are automatically generated for immediate viewing over the web
4. Reports can be automatically distributed via e-mail subscription

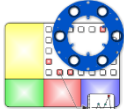


# CM4D Modules

## Workstation Applications\*



**CM4D Classic**



**CM4D Interactive (CM4Di)**



**CM4D Workcell (CM4Dw)**



**DataSmith**

## Server Applications



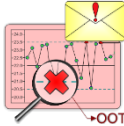
**Web Template Control (WTC)**



**DataSmith Batch**

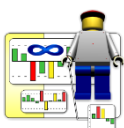


**CM4D Scheduler**



**EventSmith**

## Standalone Applications\*\*



**CM4D Reporter**

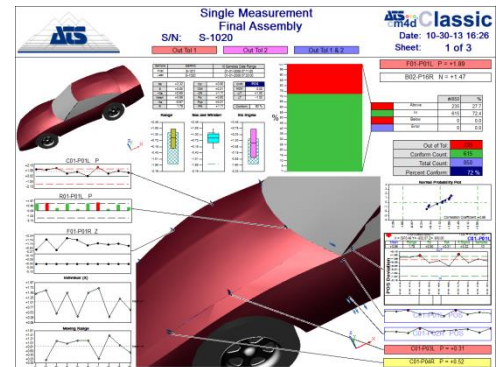
\* Fixed and floating licenses available

\*\* Upgrade path available



## CM4D Classic

Designed for the power user, CM4D Classic is the original CM4D reporting interface, with virtually unlimited reporting flexibility.



### Basic Functionality

- Customized Template Development for Graphical Reporting and Data Analysis
- Importing of Dynamic 3-D CAD Wireframe or Tessellated Images
- Statistical Process Control
- Mathematical Sub-Datum Transformations

### Functional Capabilities

#### Templates

- Support of dynamic 2D and 3D wireframe and tessellated images from CAD
- Ability to rotate, zoom and pan 3D images
- Automatic attachment of leader lines to image
- "Autoreport" capability for fast layout of custom charts
- Ability to merge data from multiple routines and measurement devices

#### Charts

- Automatic and manual chart generation
- Ability to include multiple graphics and objects (images, text, etc.)
- Basic SPC charts (Trend, X-Bar & R, Moving Range, etc), tables and descriptive summary ranking reports
- Ability to overlay multiple data rows in a single chart
- Advanced graph types (Box & Whisker, 6 Sigma Projection, Normality, Histogram, Pareto, Benchmark, Gage R&R, etc.)
- Over 500 variables available as chart objects (Mean, Range, Standard deviation, Hi, Lo, Cp, Cpk, Pp, Ppk., etc.)
- Ability to save charts and object formatting for later use

## Statistics

- Total statistical control limits generation implemented with trial limits
- Multiple spec limits
- Masking of selected sample data
- Automatic masking of unreasonable data
- Correct handling of No-Read/White-Sensor data report
- Ability to derive vector deviation based on axis deviation
- Graphical deviation report

## Data Management

- Subgroup criteria include shift, day, week, number of samples, and specific identifiers
- Highly flexible manipulation of datasets and datastacks (append, collate, subtract, add, divide, etc.)
- Advanced data and sample sifting, filtering and sorting for template development
- Ability to add searchable logs to critical data operations
- Engineering change support with date- and time- stamp
- User-defined "aliases" for user-friendly routine and feature names
- Instant availability of data for report population
- Editing of labels, nominal values, spec limits, control limits
- Association of events with desired chart formats (font color and size and background color)
- Hyperlinking of objects

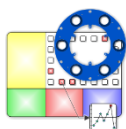
## Analysis Tools

- Measurement System Analysis wizard
- Mathematical sub-datum transformations based on user-defined 3-2-1 schema
- Creation of sub-routines
- Creation of Constructed Features

## File Management

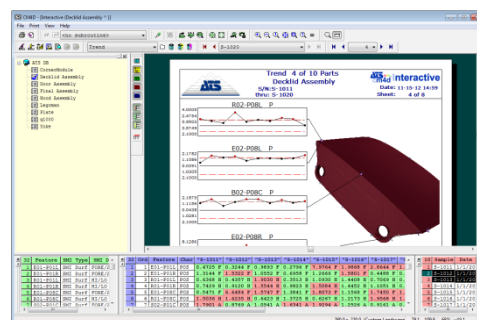
- Ability to export data in popular pre-defined text formats
- Ability to print to PDF, Clipboard, MetaFile, Bitmap and JPEG





## CM4D Interactive

Designed with the ordinary user in mind, CM4Di is a data viewer for generating high-quality reports without the need to create templates.



### Basic Functionality

- Point-and-click Graphical Reporting and Data Analysis
- Graphic Interface for Automatic Selection of Features by Zooming
- Statistical Process Control
- Mathematical Sub-Datum Transformations

### Functional Capabilities

#### Reporting

- Menu-driven point-and-click reporting interface
- Standard or customized base template
- Ability to rotate, zoom and pan 3D images
- Automatic selection of relevant features, leader lines, graphs and statistics for selected graphic area
- Single- or multiple-sheet arrangement of objects as defined by user
- Ability to drill down to a variety of customized detail charts for selected feature
- Ability to save off preferred view as a template

#### Data Management

- Organization of routine and part information into a customizable tree structure
- Three data grids for easy viewing of nominal, sample and result data
- Wide selection of basic information and statistics for inclusion in data grids
- Ability to search data grids
- Highlighting of annotation corresponding to selected data in any data grid, and vice versa
- "Keep" or "remove" selected rows in data grids for automatic selection of annotations

- Searchable logs to critical data operations
- Editing of labels, nominal values, spec limits, control limits
- Ability to activate any sample for selection
- Advanced data and sample sifting, filtering and sorting

### **Analysis tools**

- Mathematical sub-datum transformations based on user-defined 3-2-1 schema
- Creation of sub-routines

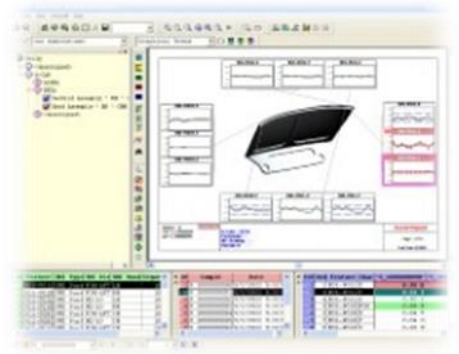
### **File management**

- Ability to export nominal and sample data to text files
- Ability to print individual data grids and routine tree structure
- Ability to print to PDF, Clipboard, MetaFile, Bitmap and JPEG



## CM4D Workcell

CM4D Workcell offers the ability to monitor and analyze data in near real-time.



### Basic Functionality

- Analysis and presentation of data within moments of collection
- Alarming
- Automatic or Manual operation
- Allows preview of data

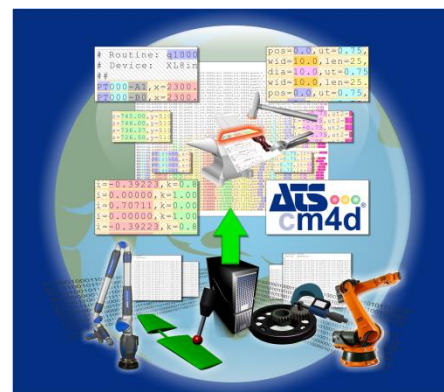
### Functional Capabilities

- CM4D Workcell provides the same functional capabilities as CM4D Interactive.



## DataSmith

The most versatile translation tool in coordinate metrology, DataSmith is a powerful data parsing device with universal translation capabilities.



### Basic Functionality

- Creation of Data Translators
- Manual Processing of Data into the CM4D Database
- Data Validation

### Functional Capabilities

#### Data Translation

- User-defined data translators
- User-friendly interface for processing text files of any format
- Exhaustive selection of pre-defined translation instructions from drop-down menu
- Automatic propagation of instructions throughout entire document upon initial entry
- Easy duplication of instructions and characteristics when writing translators
- Ability to recognize more than one sample in a file
- Comments field for excluding selected text from data processing instructions
- User defined descriptions for features and characteristics
- Exhaustive list of possible characteristic definitions, including GD&T terms and all routine and sample information, as well as the ability to define your own characteristic definitions
- Ability to associate data strings with any characteristic definition
- Ability to add searchable logs to critical data operations
- Ability to reformat, or perform mathematical calculations on, data before it is processed into the database
- Detail view for debugging translator instructions
- Colored highlighting of associated sections, features and characteristics for easy visualization inside translators

- Customizable toolbars

## **Data Processing**

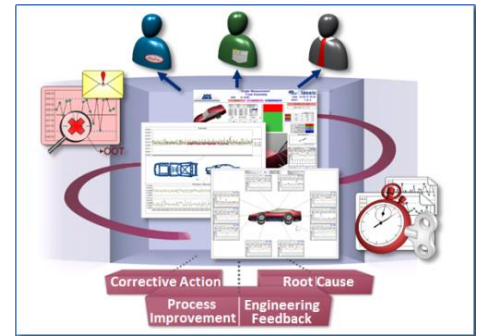
- Four distinct views for validating output data, including Output Summary
- Ability to save off Output Summary in log file
- Overview window for scanning translator documents
- Extended navigation and viewing format capabilities inside translator documents
- Ability to process multiple data files simultaneously with a single data translator
- Validation of data files with detailed process log
- Validation of individual characteristic types (text, integer, decimal value, date and time)
- Ability to recognize and assign a cause to unreasonable data
- Ability to store multiple sets of engineering changes with date and time stamps
- Automatic updates to database upon reprocessing edited data file





# Web Template Control

Designed for easy reporting over the web, Web Template Control allows additional users to perform dynamic database queries inside pre-defined templates v web browser.



## Basic Functionality

- Graphical Reporting and Data Analysis Using a Web Browser
- Dynamic Database Queries in Pre-Defined Templates
- Statistical Process Control
- User Authentication

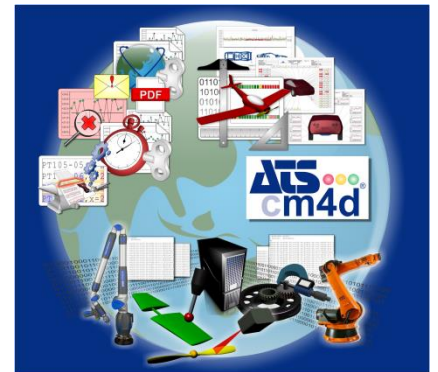
## Functional Capabilities

- Ability to organize routine and part information into a customizable tree structure
- Ability to select sheets from different documents in desired order
- Dynamic database queries inside pre-defined templates
- Ability to retrieve PDF report from remote server
- Ability to download raw data from remote server
- Integrated windows security and database authentication



## DataSmith Batch

DataSmith Batch automates the processing of data from your output text files into the CM4D database.



### Basic Functionality

- Automatic processing of data from all data collectors
- Data Validation

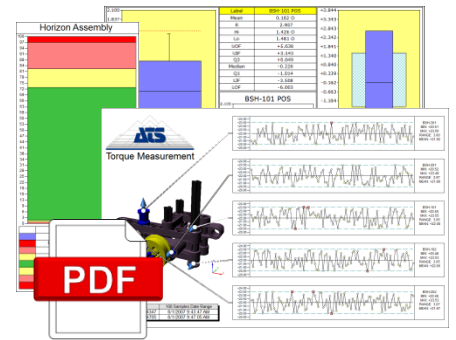
### Functional Capabilities

- Single setup file for control of all data processing options
- Ability to process data from multiple inbox folders using one or more translators
- Routing of processed data file into appropriate folders depending on status
- Validation of Data Files with Detailed Process Log
- Options to create or update nominal or sample information in database



# CM4D Scheduler

The CM4D Scheduler application automates the process of generating PDF reports from user-defined templates on a scheduled or event-triggered basis.



## Basic Functionality

- Automatic generation of PDF reports on a scheduled or event triggered basis.

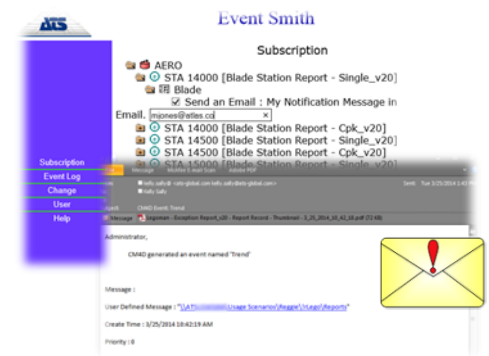
## Functional Capabilities

- Ability to print to PDF, MetaFile, Bitmap and JPEG
- Ability to append or overwrite existing documents
- Ability to output documents to specific path and file name
- Easy selection of multiple documents for a single scheduled job
- Ability to test scheduled job for validation



# EventSmith

Designed for delivery of CM4D Scheduler-generated events (e.g., alarms) via e-mail subscription.

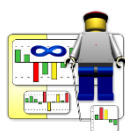


## Basic Functionality

- Manage events generated by CM4D Scheduler
- Distribute events to subscribers

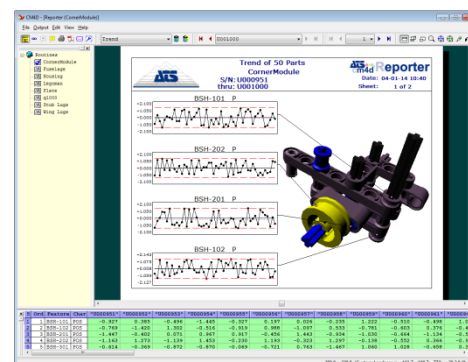
## Functional Capabilities

- Allow authorized users to subscribe to available events
- Send subscriber e-mail notification when an event occurs
- Ability for the attachment of a report to the e-mail notification
- Ability for each subscriber to attach a personal message



# CM4D Reporter

ATS's award-winning software for inspection reporting and analysis - neatly packaged for the metrologist.



## Basic Functionality

- Generate professional trending and SPC reports at a click with any FARO inspection product.
- Includes an eye-pleasing selection of pre-defined report formats for instant analysis.

## Functional Capabilities

### Features

- One-Off Reports
- Trend Analysis
- SPC (Cp, Cpk, Pp, Ppk, 6Sigma, Xbar-R, StdDev...)
- Box & Whisker Chart
- Pareto Chart
- Histogram
- Normality Plot
- Exception Reports
- Alarms with Color-Coding
- Automatic 3D Leaders
- Interactive 3D CAD Model Graphics
- Data Management
- Sifting and Sorting

### Graphics

- Interactive 3D model offers an immediate view of your part that can easily be manipulated for better viewing of measurement features.

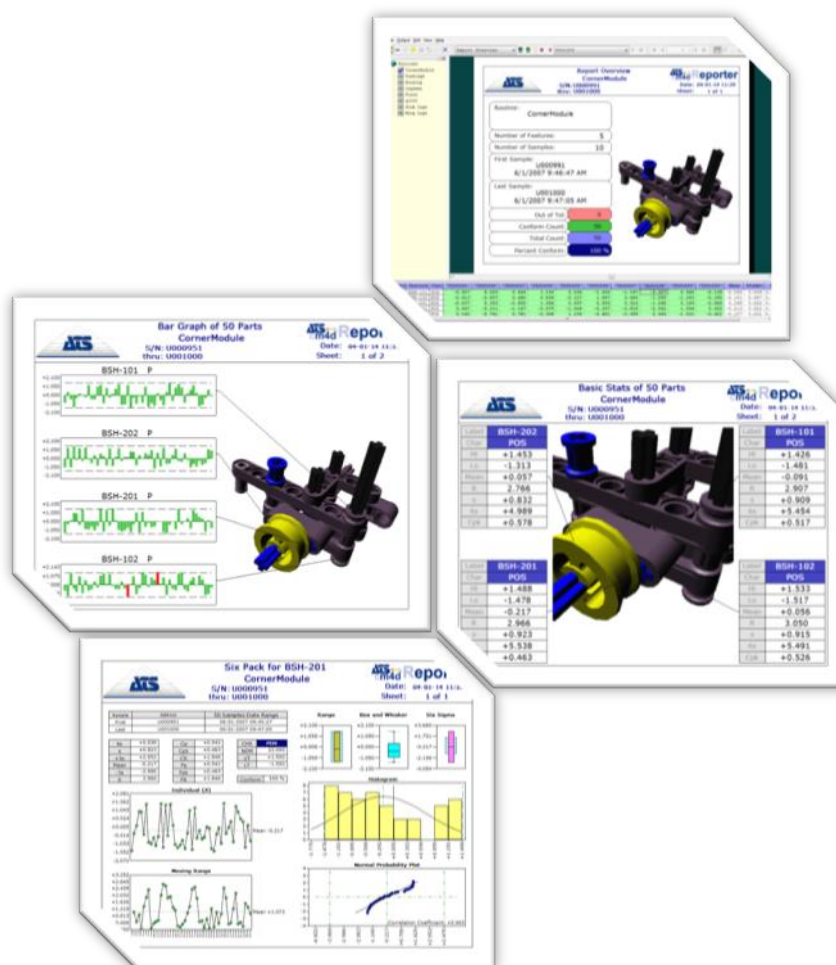


## Reporting

- A multitude of report formats offer an expert-level view of your process capability.
- Advanced SPC charts make powerful process control painless.

## Data Management

- Relational database stores large quantities of data for analysis and historical comparisons.
- Information is organized for quick and easy navigation, simple drill down, and powerful roll up.
- Individual measurements can be filtered and examined with precision.



# CM4D Basic Configurations

Using CM4D entails two major functions:

- 1) getting data into the database
- 2) reporting data out

## Collecting Data

There are 2 licensing options for getting data into the database:

- **DataSmith:** DataSmith allows the user to create a translator document for nominal and measurement data. DataSmith then allows the user to apply the translator document to selected data files and manually output the newly formatted data into the database for reporting.
- **DataSmith + DataSmith Batch:** DataSmith allows the user to create a translator document for nominal and measurement data. DataSmith Batch then automatically applies the translator document to any data files received from the collection device and outputs the formatted data into the database for reporting.

## Using Data

There are many licensing options for reporting data out of the database\*:

- **CM4D Classic:** CM4D Classic allows the user to develop custom templates and view desired data inside these templates.
- **CM4D Classic + CM4Di:** CM4D Classic allows the user to create a CM4Di Base Document. CM4Di then allows the user to report desired data on the fly, in an automated fashion that does not require the creation of a template.
- **CM4D Classic + CM4D Workcell:** CM4D Workcell allows the user monitor data via the CM4Di interface in near-real time.
- **CM4D Classic + Web Template Control:** CM4D Classic allows the user to develop custom templates and view desired data inside these templates. Web Template Control allows additional users to view desired data inside these templates over the web, using only MS Internet Explorer and Adobe Acrobat Reader.
- **CM4D Classic + CM4D Scheduler:** CM4D Classic allows the user to develop custom templates and view desired data inside these templates. CM4D Scheduler monitors data coming into the database and then prints PDF reports on a scheduled basis or as new data arrives.

\*Any licensing option for getting data into the database can be combined with any of the licensing options for reporting data out. The most popular package for a single-user configuration is CM4D Classic + DataSmith. Known as the "Developer Package", this package offers the complete basic functionality of CM4D.

## Self-contained Data Collection and Reporting

There are licensing options that combine processing data in and out of the database in simple, easy-to-use, compact solutions:

- **CM4D Reporter:** CM4D Reporter allows a single user to perform the essential data collection, analysis and reporting of the complete CM4D Suite in a self-contained, low-cost package.
- **CM4D Reporter + CM4D Reporter Observer:** CM4D Reporter Observer allows a centralized user to oversee and utilize data from one or more CM4D Reporter instances.

**ATS** is an *Independent Solution Provider*, with over 25 years' experience in the manufacturing systems arena and a wealth of experience undertaking Continuous Improvement initiatives and Manufacturing IT solution design, deployments and 24/7 support assignments.

[www.ats-global.com](http://www.ats-global.com)