Data Mining in Autocad with Data Extraction

Ben Rand

Director of IT, Job Industrial Services, Inc.

Twitter: @leadensky

Email: ben@leadensky.com

A little about me

- BA in English, Secondary Ed emphasis, Minor in French
- Technical writing: Published books on Excel, various other tech topics
- Started working with Autocad in R12 for Windows (Architecture)
  - Learned LISP, VBA to automate boring drafting tasks
  - ATC instructor: Autocad, 3DS, VBA/LISP for Autocad
- CAD Manager in Industrial Engineering starting in 2002
- Currently:
  - Full-time development using C#
  - IT stuff: servers, network, VMWare, helpdesk
  - Autocad All-Star Mentor Program
  - Taught at AU 2015 (development topic)

Welcome to AU 2016

First class at AU:

Last class at AU:

Class summary

Your drawings are a potential gold mine of information. Learn how to get the most out of your AutoCAD drawings using the powerful Data Extraction tool. Learn how to build automated bills of material, drawing title sheets, coordinate tables and more. Learn how to extract data to AutoCAD software tables or Microsoft Excel files. This session features AutoCAD.

Key learning objectives

At the end of this class, you will be able to:

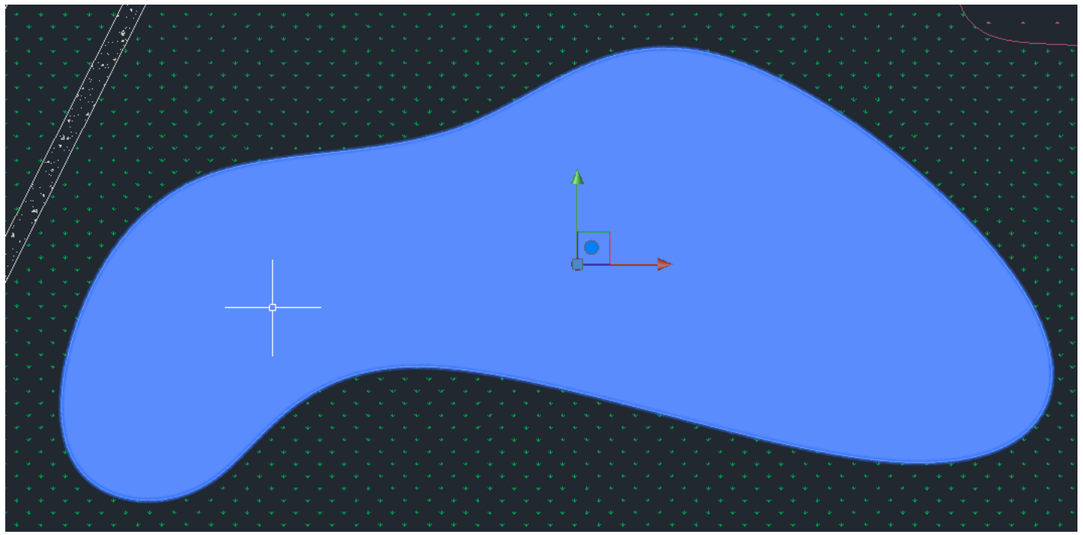
- Learn how to use Data Extraction to create tables based on drawing data
- Learn how to use Data Extraction to extract data across multiple drawings
- Learn how to link Excel spreadsheets with extracted data
- Learn how to customize data extraction using sorting, filtering, formulas, and totals

DEMO: Some ways to get “transient” information

- LIST
- PROPERTIES
- QSELECT
- SELECTSIMILAR
- *Insert Field** [annotations]
  - *fields are a form of “persistent” data extraction

A DWG file is a *Database* that displays most of its information graphically

- (entget (car (entsel)))



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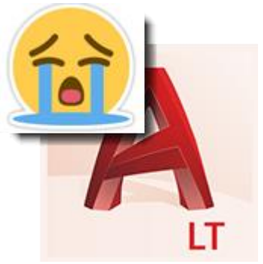
What versions of Autocad have the Data Extraction command?

- Data Extraction requires FULL Autocad, sorry LT users!



- Introduced in Autocad with 2008 version
  - Any “vertical” based on Autocad
  - NOTE: “vertical”-specific data may not be extractable via Data Extraction

Data Extraction: “Persistent” information (but updateable!)

- Most geometrical data
  - Coordinates (x, y, z locations)
  - Length (lines, polylines, etc)
  - Area (closed polylines, hatches, circles, etc)
  - Text: content and rich text format content (Mtext)
- Blocks
  - Attributes
  - Dynamic block properties
- File properties
  - Name
  - Size, etc.

What can we extract to?

- Table in the drawing
- Excel file (xls)
  - No, not directly to xlsx <sigh>
  - No, not to a selected template <sigh>
  - *Can* be linked to an existing xls or xlsx file
- Text file (txt, csv)
- Access (mdb)

Best Practices for Data Extraction

- Use blocks!
  - Attributes
  - Dynamic blocks
  - #NeverExplode
- Good layering scheme
  - Layer names represent *function*, not appearance!
  - Should enable you to effectively filter parts of your drawing (i.e. freeze/thaw FURNITURE easily)

DEMO: Extracting Room Schedule Data

- Use Data Extraction wizard to create table of attribute data
- Use Block Editor to add an attribute to an existing block
- Edit Data Extraction settings to update a table

DEMO: Extracting Quantity Take-Offs

- Use Data Extraction to create table of block quantities
- Update table after design change
- Scaling tables for presentation (plotting)

BREAK: Stand up and Stretch for 30 seconds…GO!

DEMO: Overriding Extracted Values

- Use Data Extraction to create table of extracted coordinate data
- Rename and organize columns
- Override cell values

DEMO: Customize Data Extraction with Sorting, Filtering Formulas and Totals

- Use Data Extraction based on object properties (Area)
- Summarize data
- Format data
- Filter data
- Add totals

DEMO: Extract Data across multiple drawings

- Use Data Extraction to create an Index to Drawings using title block attributes from multiple drawings
- Add folder of drawings, with wild-card matching
- Create a new drawing, and update Index table

DEMO: Link Excel data to a table

- Create a Data Link
- Create a table using a Data Link
- Resizing rows and columns
- One-way and two-way data with Excel

DEMO: Combine Autocad and Excel Data

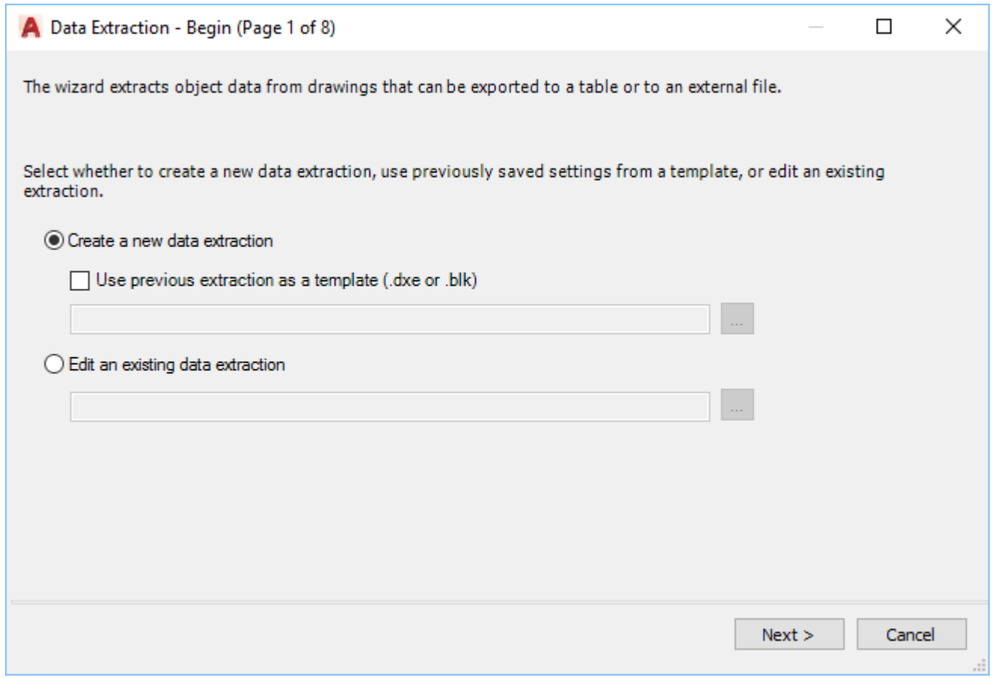
- Use Data Extraction combined with Data Link to create a “combined” table
- Use “key” from extracted (Autocad) data to link to “key” in Excel

DEMO: Custom Detail Bill of Materials

- Use Data Extraction to create a “combined” bill of materials from different details

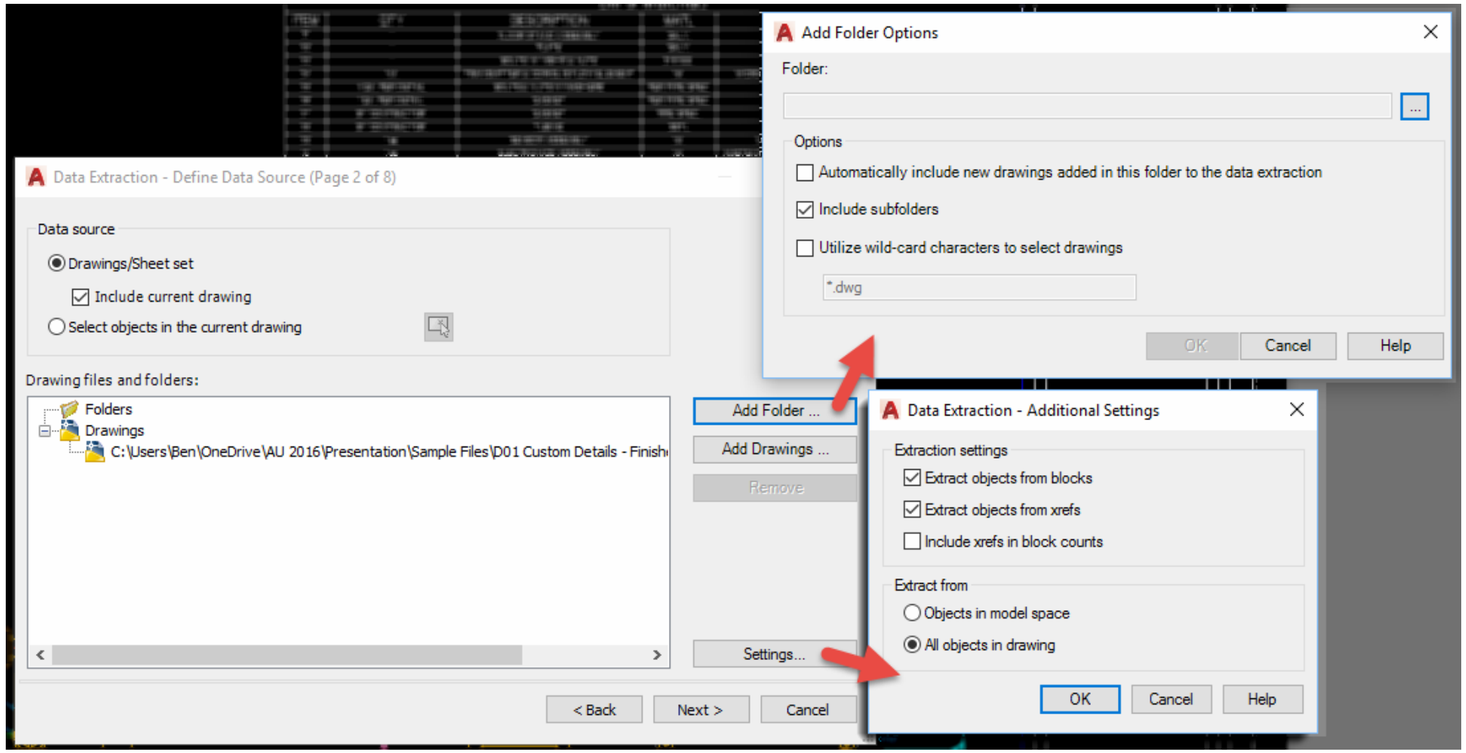
Data Extraction Wizard (step 1)

- New data extraction file (dxe) from scratch or using a “template”
- Edit an existing dxe



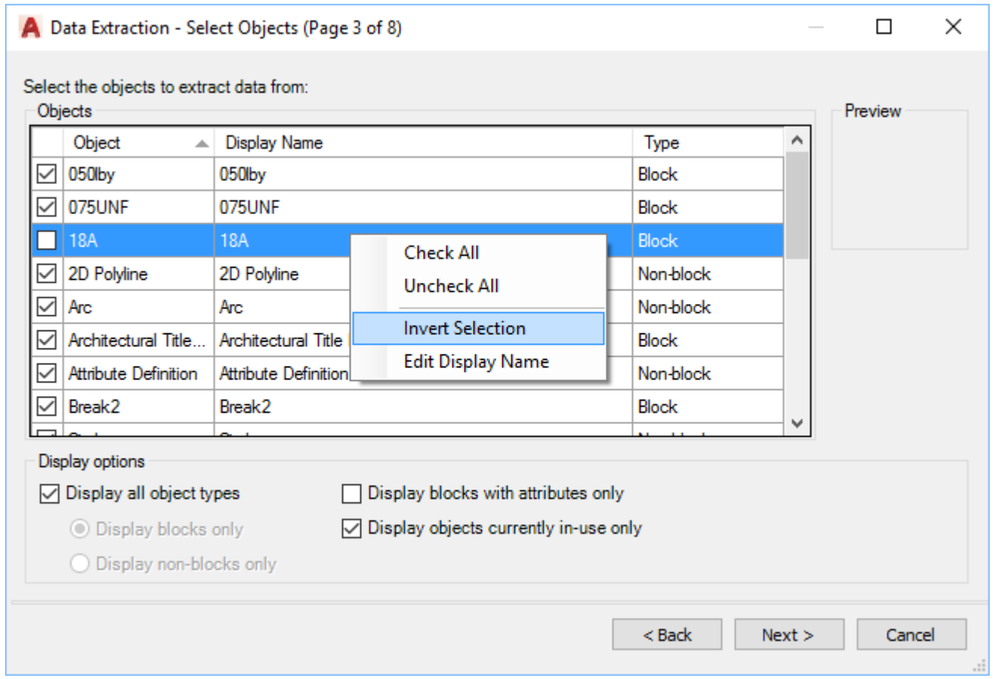
Data Extraction Wizard (step 2)

- Add multiple drawings, or folders
- Constrain to specific objects
- Extract from blocks/xrefs (or not)



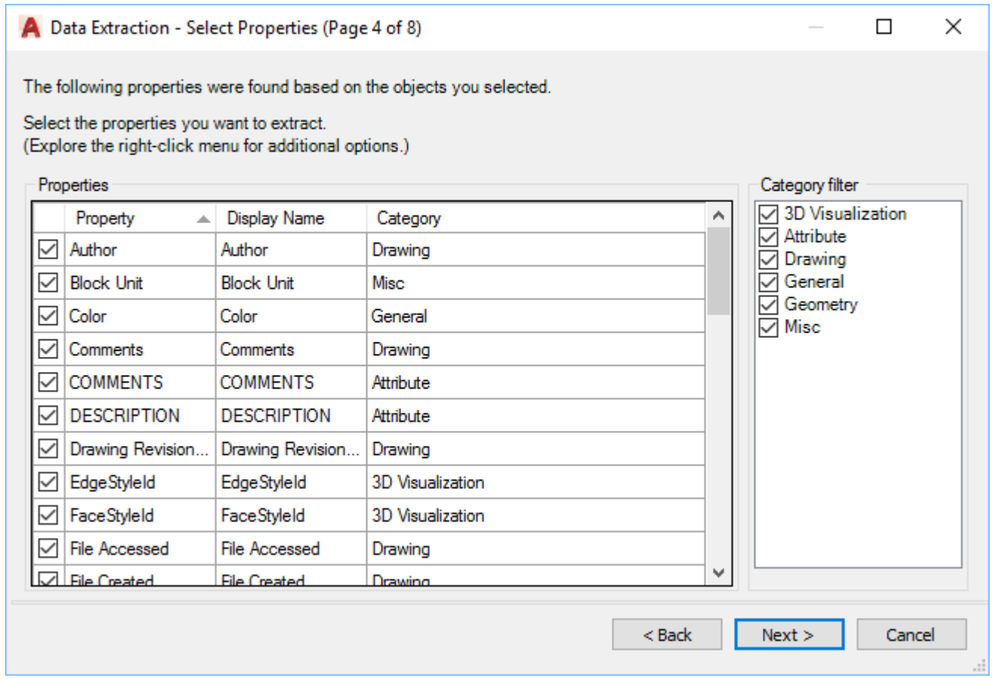
Data Extraction Wizard (step 3)

- Choose what to extract data from
- Objects, blocks



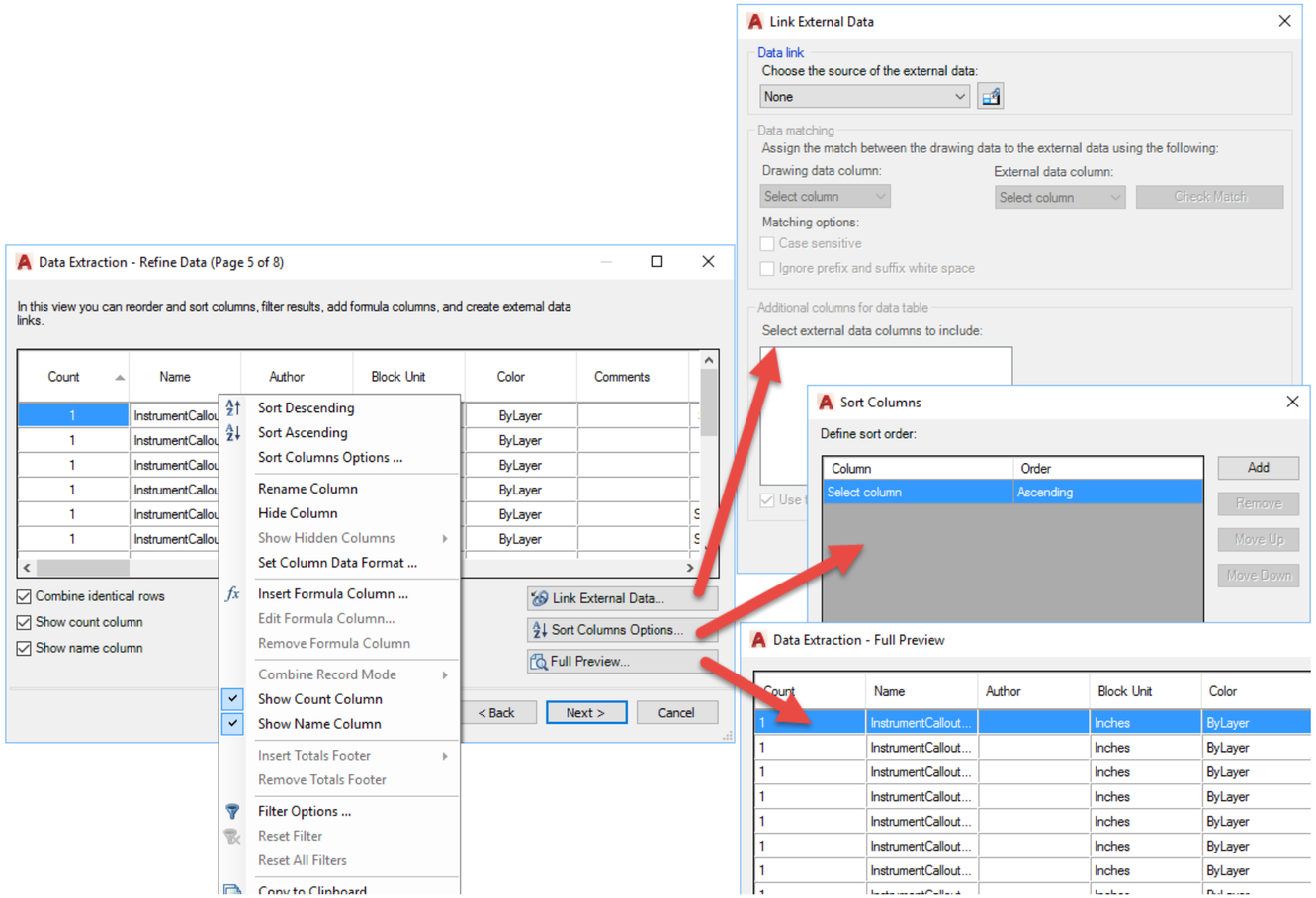
Data Extraction Wizard (step 4)

- Select properties to extract
- Geometry
- General (layers, color, etc)
- Attributes
- Drawing (file name, size, etc)
- *Category list may change based on object properties



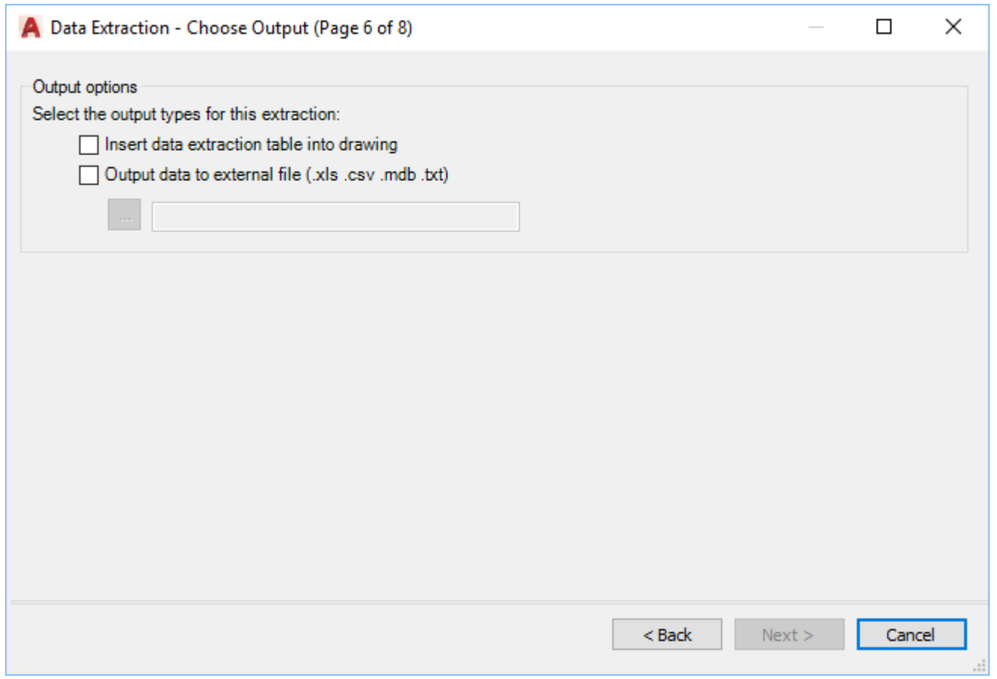
Data Extraction Wizard (step 5)

- Structure of output
  - Column name, order
  - Data format
  - Formula columns
  - Filtering
  - Totals
- Link with Excel
- Sorting



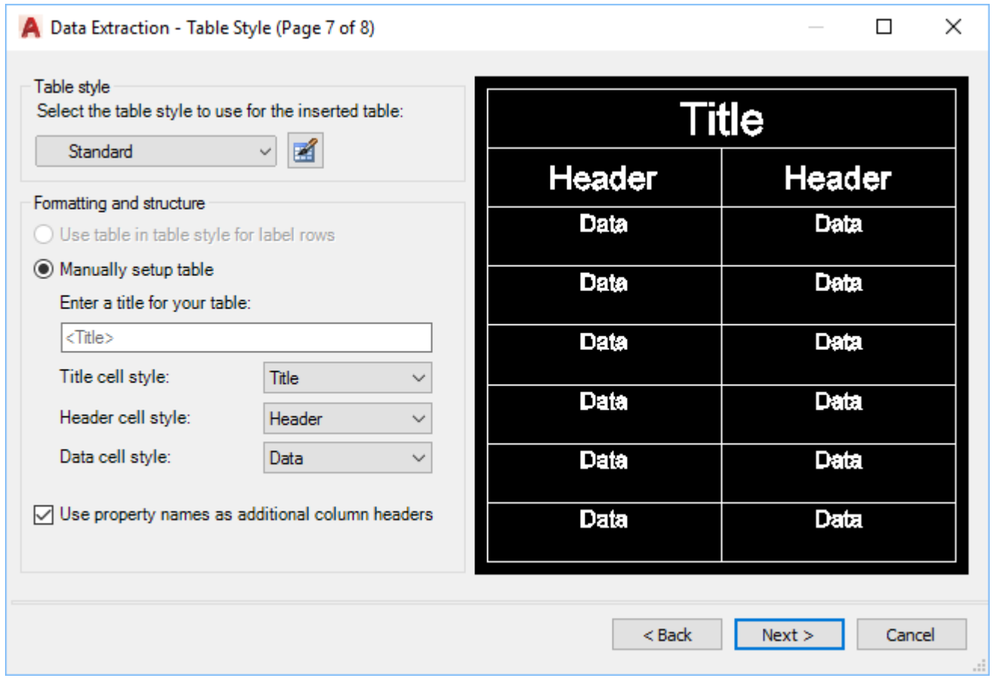
Data Extraction Wizard (step 6)

- Output destination
  - Table in drawing
  - External file
    - XLS
    - TXT
    - CSV
    - MDB



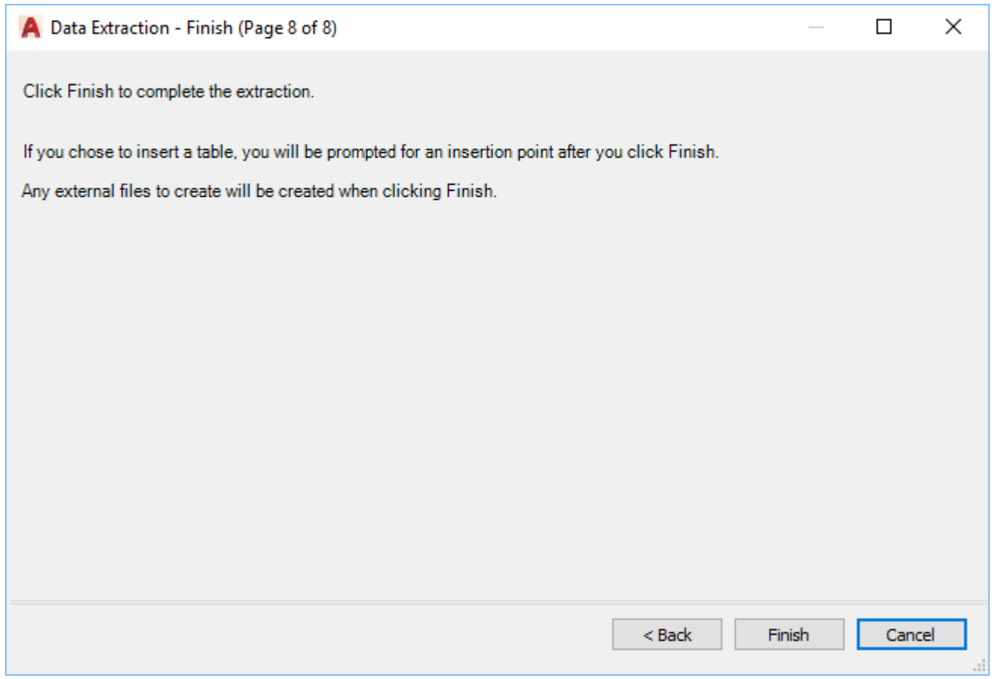
Data Extraction Wizard (step 7)

- Table and cell styles
- Title
- Column headers

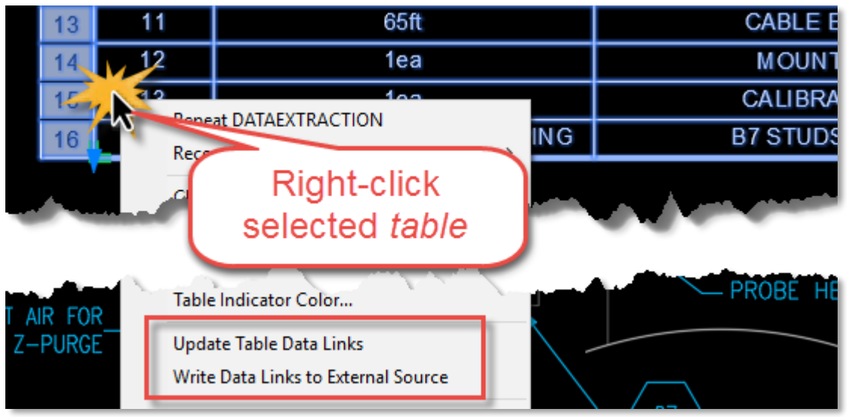


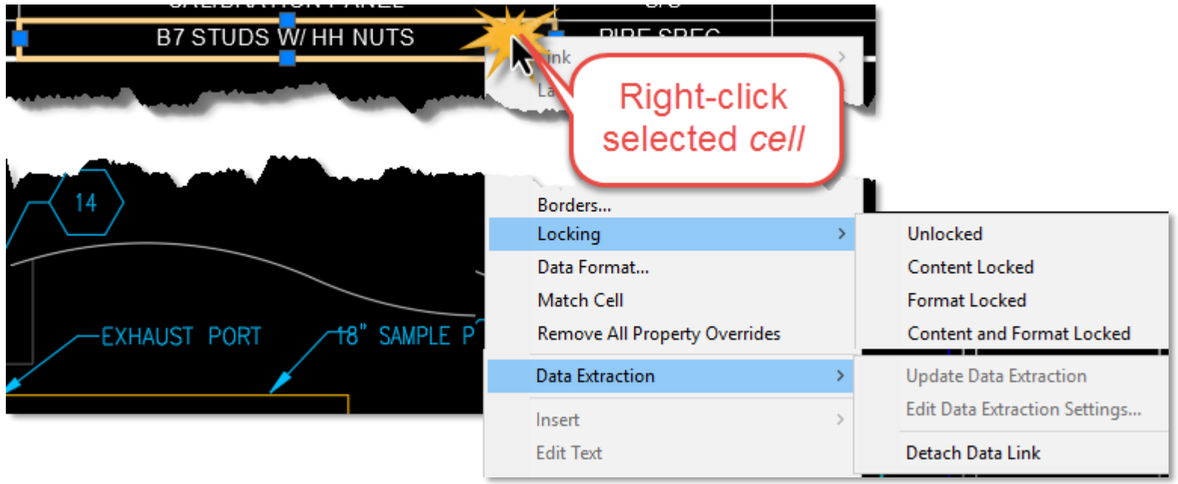
Data Extraction Wizard (step 8)

- …the end?



Updating Data Extraction Table





Other Resources

- Combining Autocad Data Extraction Tables with Excel – The CAD Geek: https://www.youtube.com/watch?v=QLGoxHMg8Zw
- Data Extraction Wizard – Autocad Help: https://knowledge.autodesk.com/support/autocad/learn-explore/caas/CloudHelp/cloudhelp/2016/ENU/AutoCAD-Core/files/GUID-D1433C93-0E7F-46D0-8D05-78DF3626B146-htm.html
- Google: Autocad Data Extraction

How did I do?

- Your class feedback is critical. Fill out a **class survey** now.
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- Give feedback after each session.
- AU speakers will get feedback in real-time.
- **Your feedback results in better classes and a better AU experience.**

Contact Info

- ben@leadensky.com
- Ben Rand
- Twitter: @leadensky