### A Manufacturing Cad Environment; Admin Style

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### **About the Speaker**

- Engineering Systems Manager / Cad Administrator at FS-Elliott Co., LLC
- Autodesk product user since 1987 and Autocad 2.6
- Involved in administration strategy, planning, configurations and deployments of Engineering Business software and processes
- Previously an Autodesk Sr. Mechanical AE for an Autodesk Reseller in Roanoke, Va
- Been involved with Autodesk Manufacturing software since beta
   Mechanical Desktop and then beta Inventor (Rubicon) in 1998
- Have taught lectures, labs and virtual lectures at AU since 1995
- <u>ksmedley@fs-elliott.com\_or\_kevin.j.Smedley@gmail.com</u>





### Class summary

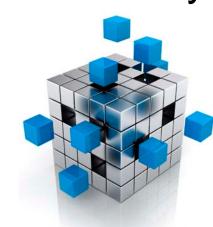
"Standards



Communications



Consistency"



The lecture will have a theme of build; Strategies | Implementations | Efficiencies

This lecture is about how to build, implement and run a highly technical Cad arena to produce and sustain Cad designs for manufacturing

Cad and PDM, a little sharing with CNC and sprinkling in A360 for Sales

Cradle to Grave





### Key learning objectives

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

- Think steps ahead of the current process
- Incorporate equations into the plan
- Utilize higher level tools and features
- Formalize processes to stave off potential problems
- Limit human error...



# A couple of Definitions to start the discussion







#### **Business Practices**

Definition:

"A method, procedure, process, or rule employed or followed by a company in the pursuit of its objectives. Business practice may also refer to these collectively."

Mission Statement & Quality Policy; A company's direction...







# What does it take to strategize and implement an efficient Cad and Vault Environment?

```
strat·e·gy
```

/ˈstradəjē/

noun

a plan of action or policy designed to achieve a major or overall aim.

"time to develop a coherent economic strategy"

synonyms: master plan, grand design, game plan, plan (of action), action plan, policy, program;

More

- the art of planning and directing overall military operations and movements in a war or battle. synonyms: the art of war, (military) tactics "military strategy"
- a plan for military operations and movements during a war or battle.
   "nonprovocative defense strategies"



Translations, word origin, and more definitions





### Standards

#### Where to Start?

Prepare a paper for upper management and executives



You must have buy in from the executive level

Executives must understand the investment(s) that you are looking to implement

10,000-foot overview with positive direction



#### Think steps ahead of the current process:

The strategic ideas are to implement software and database technology to the manufacturing facility(s)

All of the Cad and database standards along with configurations need to be uniformly instituted

Product Document Management (PDM) formulas are to be created on a global level of Collaborating by means of SQL replication



Build: a picture

Begin to build the picture of time, cost and impact

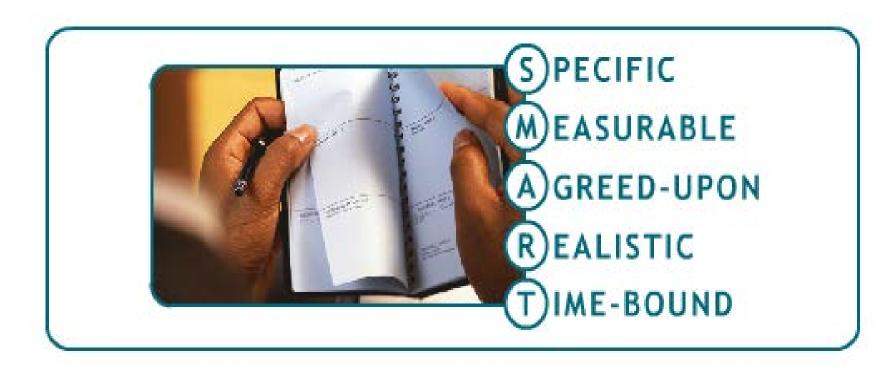
Now is the time for specifics

Also is a major document for the IT department

**Impact** 

Time

Cost







#### Strategic pieces include:

Servers

Software

**Databases** 

Workstations

Common Folder Structure

**Training** 

**Deployments** 

Users

Shop & Fabrication

Security

Marketing

Procurement/Purchasing

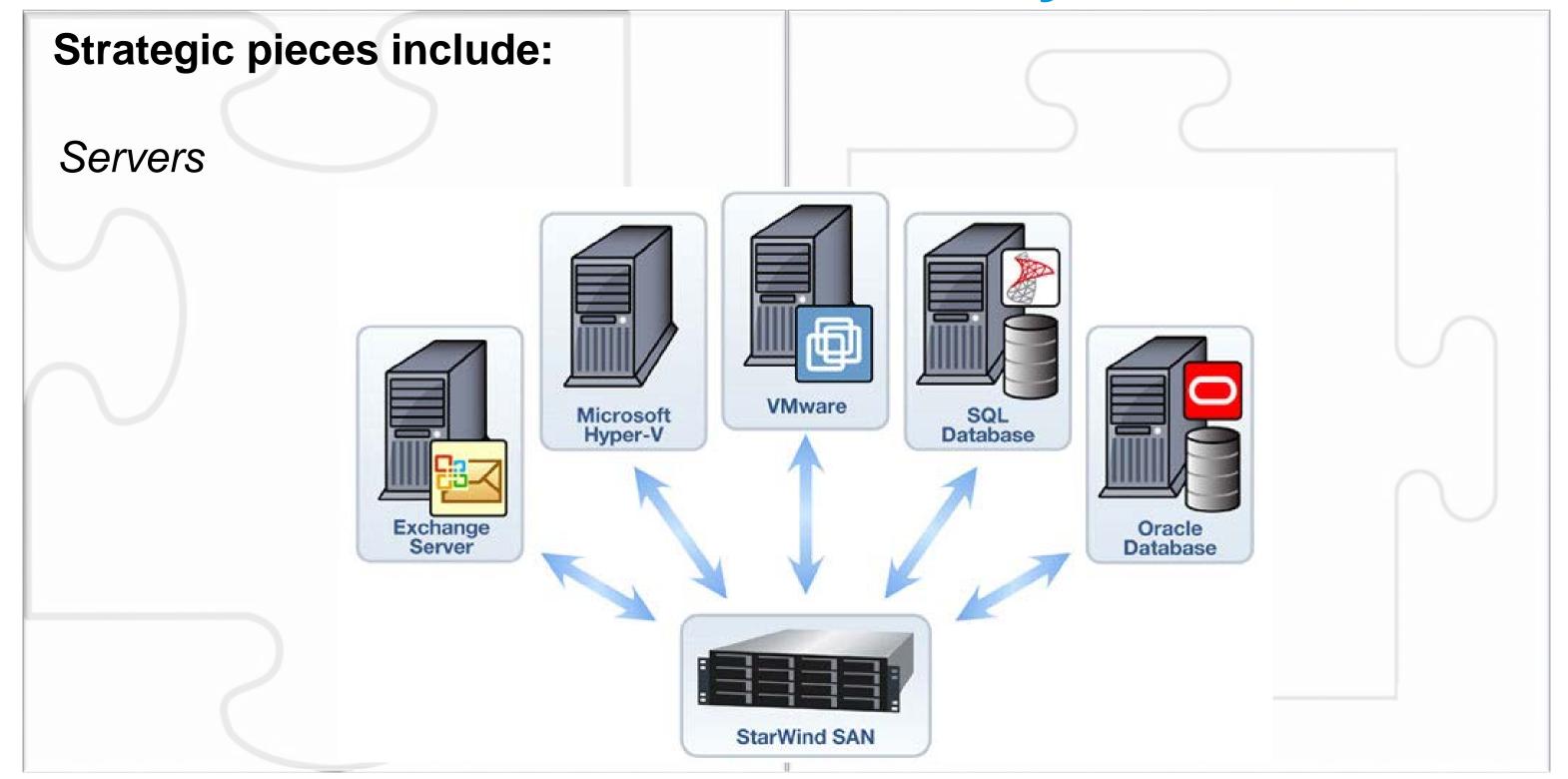
Engineering/Management

Inventory











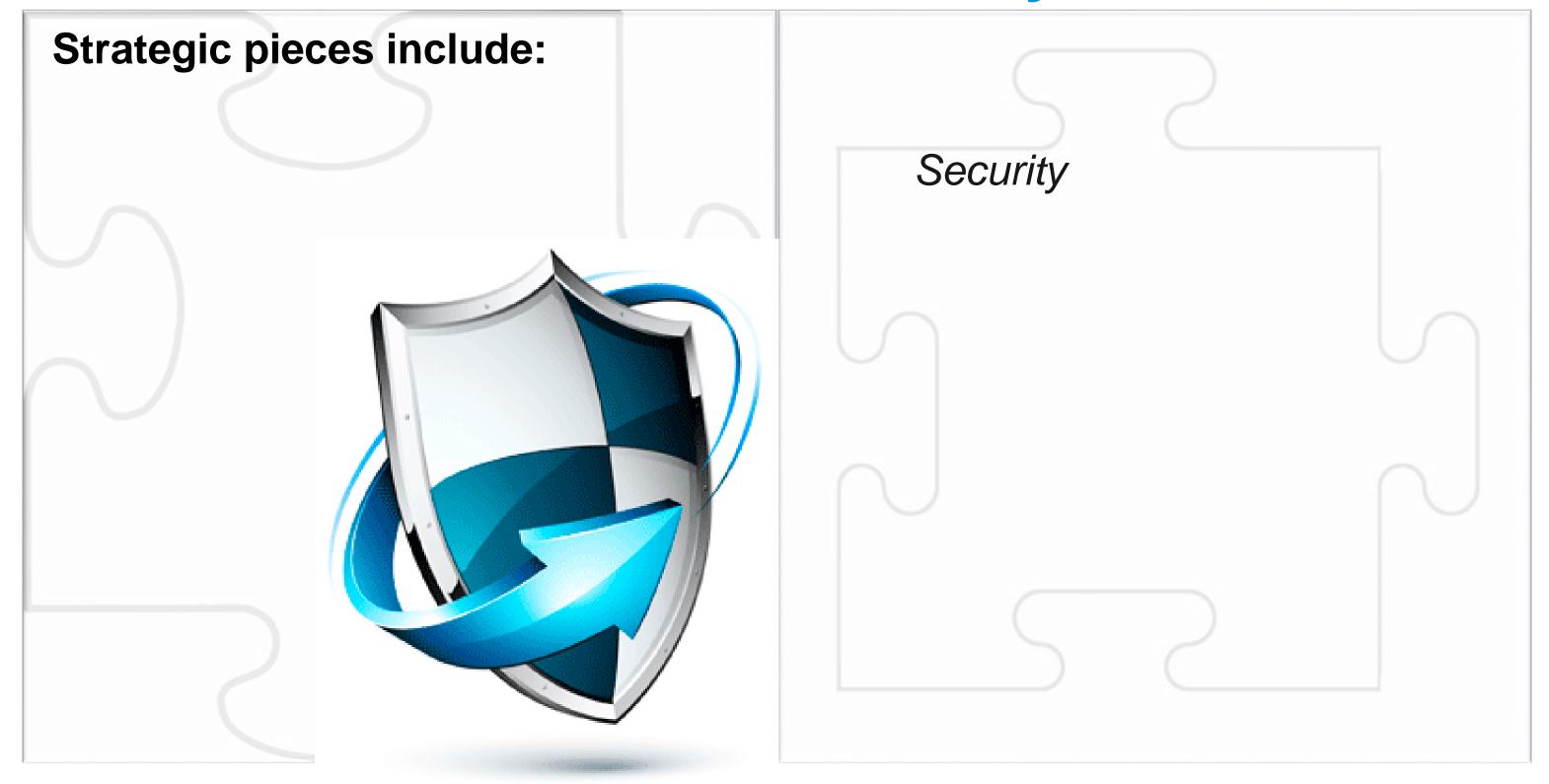


















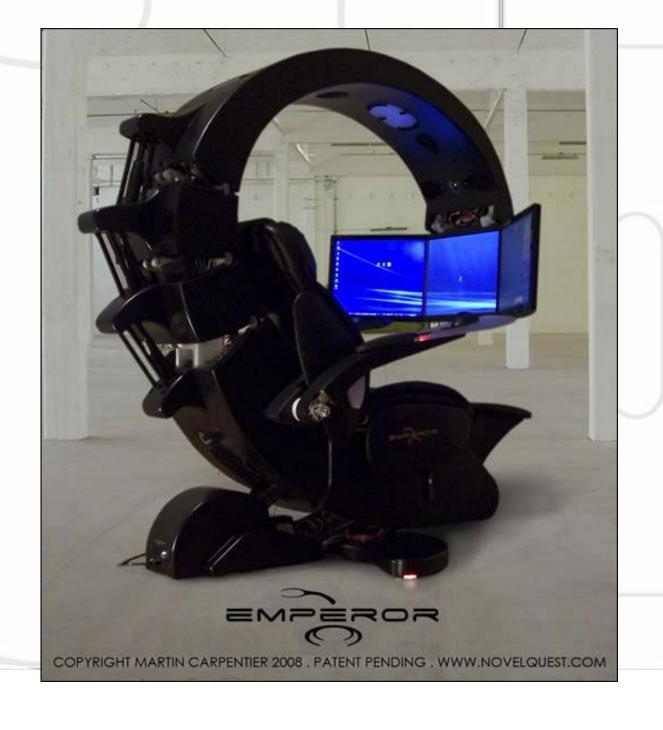








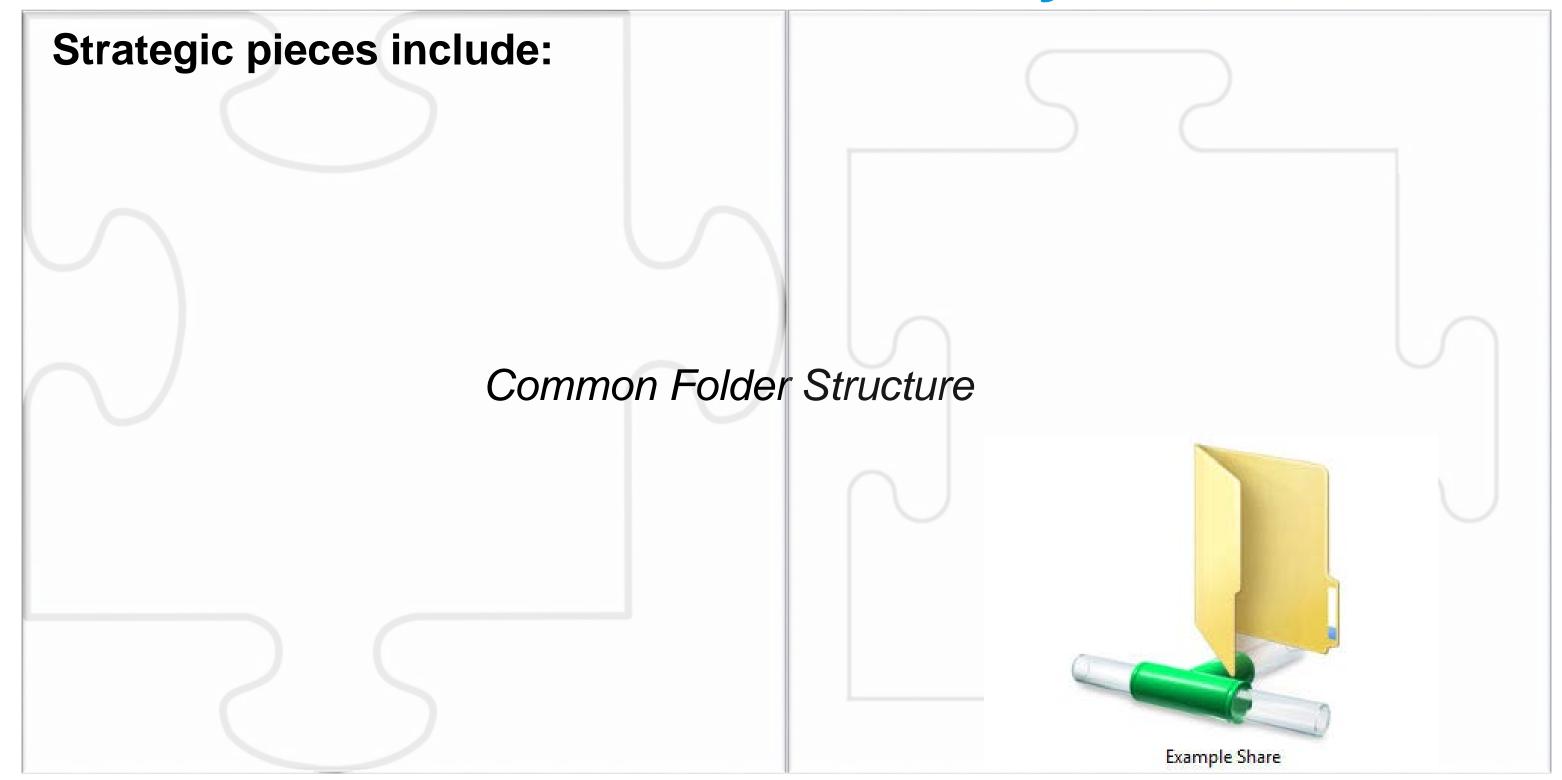
### Strategic pieces include:



**Workstations** 

















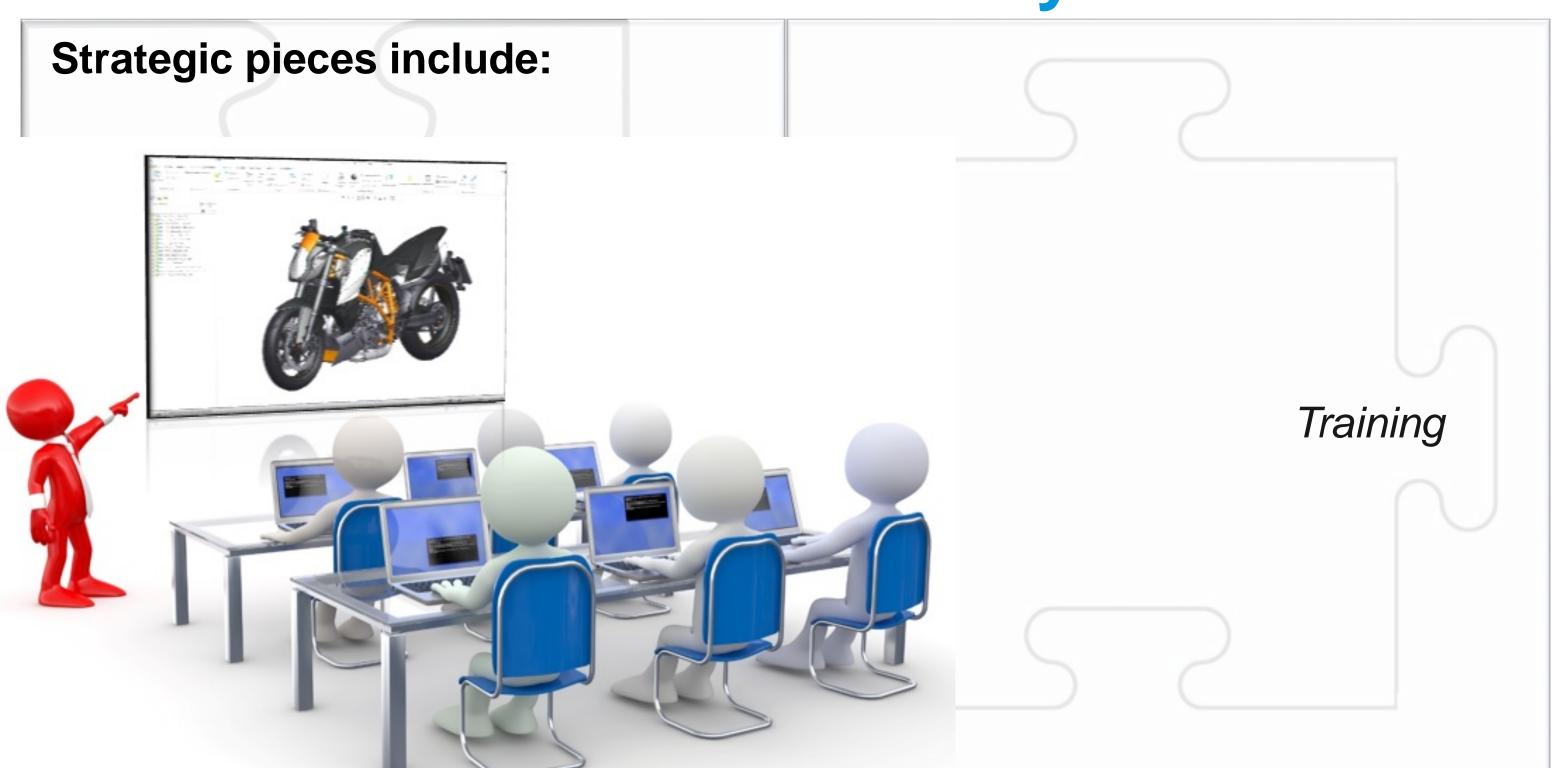






















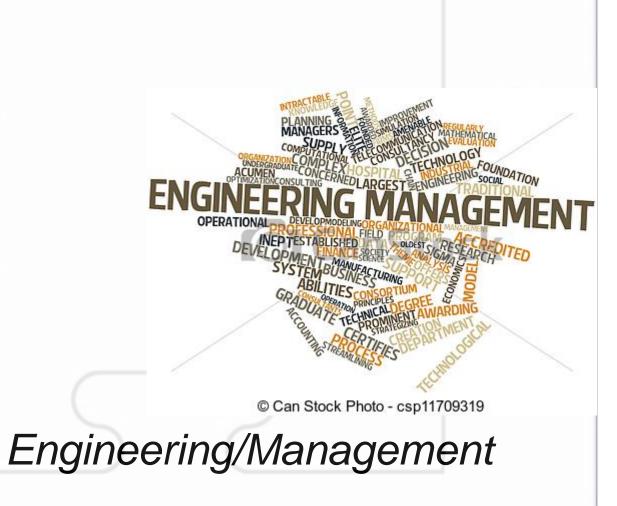
#### Strategic pieces include:







Inventory







#### Incorporate equations into the plan

**Build: the landscape** 

Product Design Suites or Manufacturing Collections; software applications to use for your design work and deliverables

Main Cad tools of Inventor, Autocad and Vault

Other applications to benefit from

What other applications would assist in growth over the coming year





#### **Deployments**

**Build: the landscape** 

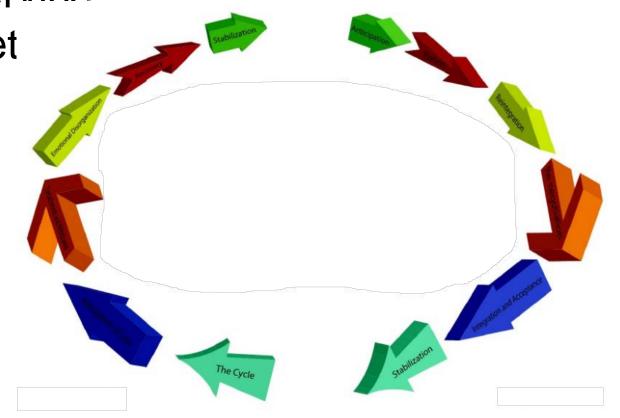
Deployments are for installations and standardizing configurations

Deployments are essential for upgrades/updates, service packs, new hires, maintaining company standards, et

IT love

Think of deployments in a perspective of groups

Design Suite and/or Collection applications



#### **Deployment Scenarios**

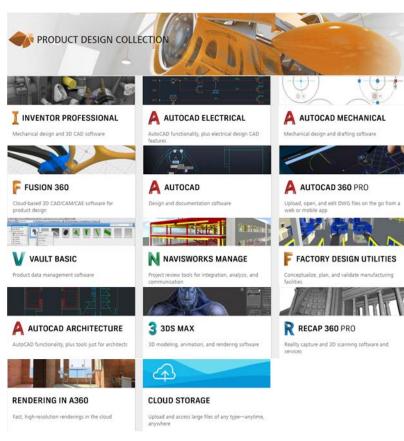
#### **Design**

- 1.Inventor
- 2. Autocad Mechanical
- 3. Autocad
- 4. Fusion 360
- 5. Vault Professional

Engineering

1. Autocad P&ID

2. Vault Professional



#### **Controls**

- 1. Autocad Electrical
- 2. Vault Professional

#### Misc.

- 1. Autocad Mechanical
- 2.3D Max
- 3.Showcase

Vault Professional



#### **Another Definition**

### ef·fi·cien·cy

/əˈfiSHənsē/

noun

the state or quality of being efficient.
"greater energy efficiency"
synonyms: organization, order, orderliness, regulation, coherence; More

- an action designed to achieve this.
   plural noun: efficiencies
   "to increase efficiencies and improve earnings"
- technical
   the ratio of the useful work performed by a machine or in a process to the total energy expended or heat taken in



Translations, word origin, and more definitions







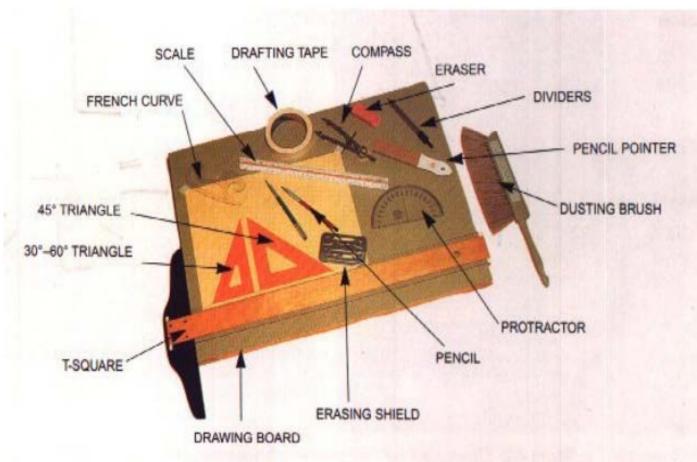
Utilize higher level tools and features

**Build: the tools** 

What tools or features will assist with Efficiency

"Back in the day", drafting tools included such things as pencils, erasers (Manual and/or Electrical T-Squares, French Curves, Paper, Vellum and some symbol templates to use for tracing.

#### **Drafting Tools**



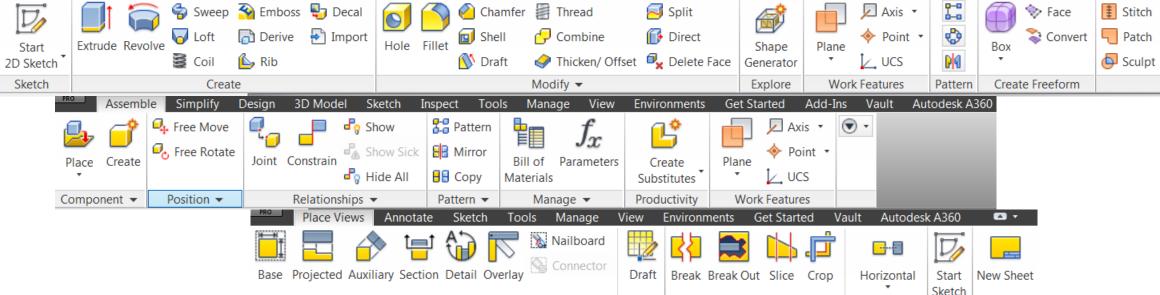


Standards

Utilize higher level tools and features

**Build: the tools** 

What tools or features will assist with Efficiency



Tools are based on programs and commands that allow users to create designs that were never imaginable before. We have emerged from a flat 2D table to a vast world of 3D and even 4D







Time vs. Quality

- Efficiency; Where do we look for this in our working environment? Some look at it through an hourglass or time cards
- Some analyze efficiency through product completion
- Some look at efficiency in a longer span of time, from estimating an idea to the completion of the idea.





Time vs. Quality

The tools and skills of a Cad designer varies as in any job, but the ability to learn and grow using the Cad tools is endless.

To be outstanding at your design position, it takes more than drawing lines, arcs and circles.

Cad developers and programmers do not do the design work; they create the tools that allow us to master better ways to design





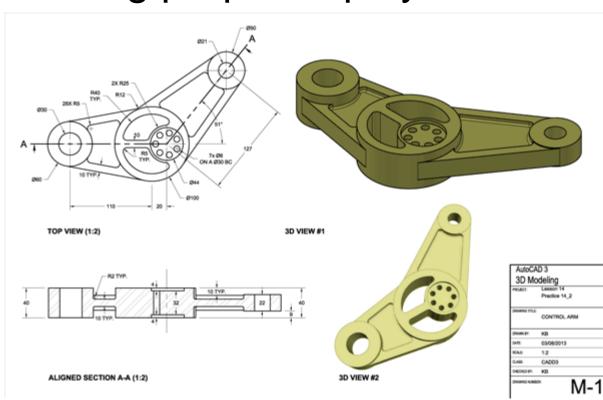


Cad software applications are intelligent

Inventor has advanced tools, but you must learn those and incorporate the intelligence into company methodologies

Administrators efficiency comes from having template scenario

Efficiency of an upgrade is key in achieving proper deployment configurations









#### Questions:

- 1.Does the Cad administrator/manager implement 1 template per file type or multiply that by units of measure?
- 2. Are there company standards for drawings, parts, assemblies and/or presentation files?
- 3. What are the basics for extracting BOM's (Bills of Material)?
- 4. How does all the preparation affect the designer's workflow?
- 5. Where can a Cad Administrator impact efficiency the most?





Formalize processes to stave off potential problems

Build: the Standards

```
for·mal·ize
/ˈfôrməˌlīz/ •)
verb
   give (something) legal or formal status.

    give (something) a definite structure or shape.
```



Translations, word origin, and more definitions



Formalize processes to stave off potential problems

Build: the Standards

Without proper workflows, processes and company standards, chaos emerges quickly





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Build: the Standards

Without proper workflows, processes and company standards, chaos emerges quickly

The Cad Administrator is responsible for implementing standards into the design environment which allows for the designers to focus on their work, and not the Cad systems abilities





Formalize processes to stave off potential pr

Build: the Standards

Without proper workflows, processes and company standards, chaos emerges quickly

The Cad Administrator is responsible for implementing standards into the design environment which allows for the designers to focus on their work, and not the Cad systems abilities

Create standard SOPs (Company Standard Operating Procedures).





#### **Build: the Cad Standards**

Inventor

**Drawings** 

1. Properties

2.Title Block

3.Border

4. Views

5. Numbering

6.Units

7. Styles

8. Sheet size

9. Dimension/Text

Inventor

Parts/Assembly

1.Materials/Color

2.iProperties

3. Simplification

Autocad

<u>Drawings</u>

1.Attributes

2.Title Block

3.Border

4.Units

5. Sheet size

6.Dimension/Text

Vault storage

& revision control

**Standards** 

1.Configurations

2. Lifecycle Revisions

3.Change Order workflows

4.Item Mater workflows

5. Folder layout

6.Security

7. User's login

8. Groups









**Build: the Vault Standards** 

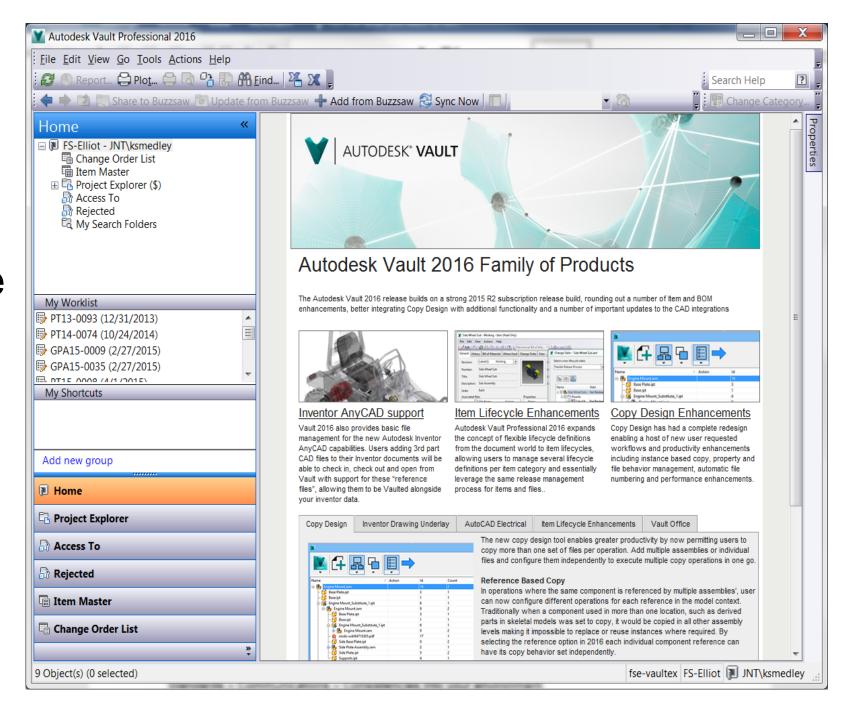
The most complicated aspect of a companywide success story is the Vault Configurations and workflows

Lifecycle Revisions, Engineering Change Orders, Item Masters

Vault is built on rules!

Setting up rules and security will set the tone for the structure

Process Methodologies, Workflows



**Standards** 



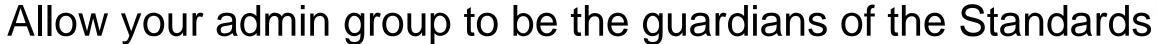
#### Limit human error

Build: a limitless environment

Human error is inescapable, but can be limited

All manageable by incorporating

Standards – Communications – Consistencies



Start using iLogic or API to automate redundancies

Efficient processes can be formulized using Copy/Design.



Standards



#### **Conclusion**

**Build: the finale** 

Administrating Cad and Data Management within a manufacturing environment is a challenge

The time allocated to the whole process can span anywhere from a month to three or four months







#### **Conclusion**

**Build: the finale** 

Remember the final document should have all the steps that are in place now for IT to be able to install and configure a new user workstation





#### **Conclusion**

**Build: the finale** 

Disaster Recovery;

Vault Backups are critical and should be task scheduled through the server

Backup strategies are either a full back up every night or one full back up on the weekend and Incremental backups during the week





Appendix A

14 Bulleted things to think about...







### How did I do?

- Your class feedback is critical. Fill out a class survey now.
- Use the AU mobile app or fill out a class survey online.

PL20876

- Give feedback after each session.
- AU speakers will get feedback in real-time.
- Your feedback results in better classes and a better AU experience.







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