# Become a Legend in Your Industry with CAD Leadership

Wayne Perciful

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# About the speaker

## Wayne Perciful

Wayne Perciful is the owner and CTO of Perciful Consulting, which offers CAD Management and custom automation solutions for the energy, pharmaceutical and technology industries as well as multi-national engineering, construction, procurement and management companies. Wayne had four years of CAD Management experience and six years piping design experience prior to being contracted to Shell's Upstream Unconventionals Americas department. While on assignment providing CAD Management and Piping Design services Wayne implemented automated facility drafting and design for Well site facilities, Salt Water Disposal facilities and Central Processing facilities, updated the drafting/design standards and automated implementation and maintaining of the drafting standards. Prior to assignment at Shell, Wayne was the Drafting and Design Manager for BHP Billiton's North American Shale department. In his spare time, Wayne works on practical application of machine learning and AI for CAD and project management.

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# Course outline

## Intellectual property

- The different perspectives
- Risk mitigation
- Addressing concerns
- Establishing value

## Get to know the company

- Meet and assess the team, review all current projects
- The great value of mentoring and sponsoring

## Implementing & maintaining drafting standards with automation

- CAD standards: borders, layers, text styles
- Implementing automation
- Managing standards indirectly

## Developing a KPI plan & performance scorecard

- Tracking labor hours against project scope
- Tracking schedule/milestone deliverables
- Developing your KPI plan & scorecard
- Throttling expectations

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# Protecting your intellectual property

## Disclaimer:

I am not a lawyer!  This is not legal advise.

For legal advise seek professional legal counsel

Photo credit goes here

# Different perspectives

## Your focus

- Take my code with me when I move on
- Protect my code from theft
- Convert employer to client when I move on

## Staffing agency focus

- We don’t even know if the client will want to use your software.
- We’ll need to get the client’s approval to change our contract.
- Why don’t you sign the contract as is, and if the client agrees later we can amend our contract?

## Employer focus

- How do I trust this person?
- What happens when this person leaves?
- Who else will be able to use these tools?

## How to address employer concerns

- **Build a library of ‘right solutions’ instead of ‘right now solutions’**
- **Perpetual license agreement**
- **Anyone that you choose, may use the tools.**

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# Risk mitigation

## Things to consider

- People will attempt and succeed in stealing your code
- Employers may break agreements
- Do it anyway!

## Steps you can take

- Compile your critical code
- Develop your code at home or on your own personal computer
- Secure it against employees, but not against employers

## Things **not** to do

- Do NOT compile all of the code!
- Do NOT remove or delete code you place on their network!
  - Even if your replacing it, mark it retired
- Do NOT keep it all to yourself!  Inspire and empower people to grow!

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# Impact of automation in upstream unconventionals

## Shale well site facility design


### Labor reduction

Shale well site facility design took engineering firms 160 hours for a total of 8,000 hours per annuum. Using my automation it takes 40 seconds per facility for a total of 33 minutes per annum.


### Cost reduction

Shale well site facility design done by engineering firms cost $40,000 per facility for a total of $2,000,000 per annum. Using my automation it cost $1 per facility for a total of $50 per annuum.

## Salt water disposal facility design


### Labor reduction

Salt water facility design took engineering firms 900 hours per facility. Using my automation it takes 1 minute per facility.


### Cost reduction

Salt water facility design done by engineering firms cost $163,000 per facility on average. Using my automation it costs $1.5.

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# Design one automate many


PATENT PENDING

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# Get to know the team

## Have them walk you through their day

- “What type of work do you do?”
- “Show me how you do it, assume I know nothing!”
- Are they loading any LISPs or scripts on their machine?
- Have they edited their PGP file?

## What are their career and development goals

- How long have they worked for the company?
- What are their aspirations?

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# Assessing their abilities

## Strengths and opportunities

- CAD software knowledge
- Drafting knowledge
- Design knowledge
- Leadership aptitude
- Training and mentoring aptitude
- Soft skills

## Things to keep in mind!

- As much as possible seek opportunity to learn something from each person
- Avoid teaching anything, build rapport

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# Encouraging growth

## Mentorship

- Know the team’s career and development goals
  - Get them excited to learn and grow
- Provide a steady stream of feedback
  - Help them to brake down their goals into quarterly milestones (KPIs)
    - Track their progress on their KPIs
  - Being sure to maintain enthusiasm for development

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# Team development KPIs

## Types of training

- Weekly meeting drop-ins
- Lunch and learns
- Certifications
  - Define clear role descriptions and expectations
    - Drafter I – IV and Design I - IV
    - Provide employees a road map for development
  - Provide management with an assessment of each team member’s current skills and their KPI goals

## Screenshot videos

- Build a library, or University, of training videos and materials
- Develop assessment tests for the videos

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# Supreme excellence

## Sponsorship

- When a member of the team learns something new, have them develop and lead a lunch and learn on the material
  - Enabling junior staff to teach the team builds morale and encourages growth
  - Have a more senior member of the team review the performance and provide feedback  for development
- Have senior members of the team weigh in on role definitions and expectations
  - Have those same team members develop training for these different levels
  - Always have someone learn first, then teach.
  - Those that know how, can mentor
- Mentor and sponsor team members who provide the greatest push back

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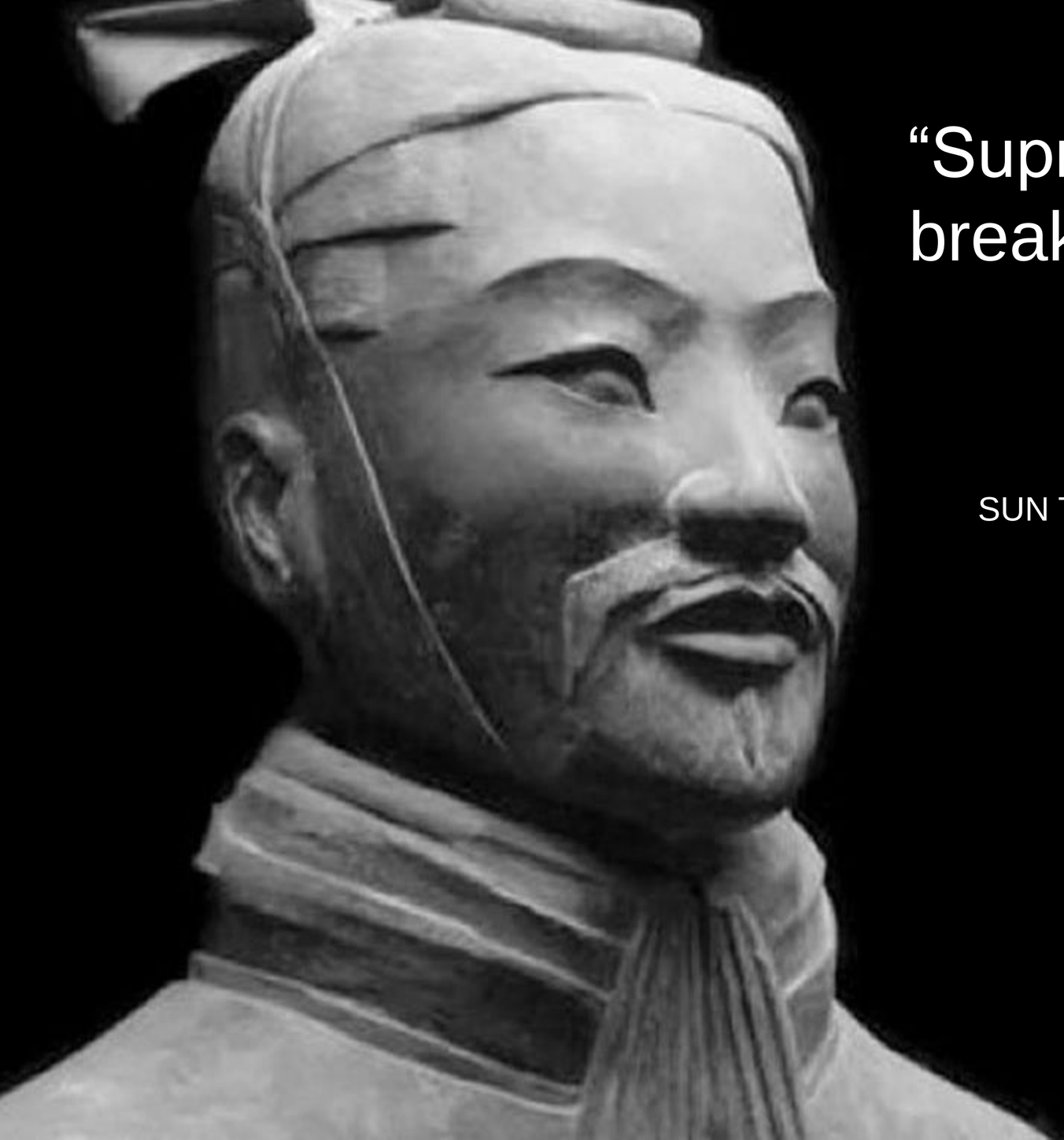

“Supreme excellence consists in breaking the enemy's resistance without fighting”

SUN TZU, THE ART OF WAR

# Get to know the work

## Look at all current projects

- Review drafting and design standards looking for potential opportunities
- Assess the degree of adherence to the standards

## Assessing the opportunities for quality and accuracy

- Assess their
  - Borders, layers and text styles
  - Current process for plotting
    - Plot styles
  - Automation: LISPs, tool bars, tool pallets

## Things to keep in mind!

- Build a list of all opportunities sorted by
  - Greatest impact with least effort

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# Ensuring standards compliance with automation

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# Strategies for automation

## House keeping routines

- Identify the drawing type by file nomenclature and or by the border within the drawing file
- Ensure that pathing is correct, such as CTBs
- Check to insure all settings for each layer in the drawing file are correct, or fix them
- Insure all text styles, dimension styles etc. are properly loaded
- A new hire routine that sets all of the pathing is always handy

## Handy automation, from which the house keeping is run

- Plotting and batch plotting routines
- Automation revision management
- Redefining save is an option, although I typically avoid it

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# Build trust & enable development

## The ACAD.LSP file

- An excellent opportunity for training
  - Write extensive comments
- Protect your intellectual property by loading compiled code
- You can still call compiled routines from your ACAD file
  - In doing this your IP is safe, yet the team is able to use it

```
(setq #MyDoc    (strcat "C:/Users/" (getvar "loginname") "/Documents/")
    #MyDesk     (strcat "C:/Users/" (getvar "loginname") "/Desktop/")
    #Projects   "X:/Documents/Work/Perciful consulting/Projects/"
    #Standards  "X:/Documents/Work/Perciful consulting/Standard designs"
    #CADCore    "X:/Documents/Work/Perciful consulting/CADCore/"
    #Lisps      (strcat #CADCore    "LISPs/")
    #Scripts    (strcat #CADCore    "Scripts/")
    #Logs       (strcat #CADCore    "Logs/")
    #Blocks     (strcat #CADCore    "Blocks/")
    #Borders    (strcat #Blocks     "Borders/")
    #Stamps     (strcat #Blocks     "Stamps/")
)
(netload (strcat #Lisps "Joshua.dll"))
(load (strcat #Lisps "CADCore.fas")
;;;
;;;-------------------------<(Drafting Settings)>-------------------------;;;
;;;
    (setvar     "cmdecho" 0)            ;   0 Turns off echoing
    (setvar     "dragmode" 2)           ;   0 Auto- always displays an outline of
    (setvar     "BACKGROUNDPLOT" 0)     ;   0 PLOT & PUBLISH Foreground; 1 PLOT F
    (setvar     "SAVETIME" 5)           ;   0 Turns off automatic saving, >0 Save
    (command    "menubar" 1)            ;   1 Turns on the File/Edit/View menu or
    (setvar     "attreq" 0)             ;   0 Assumes the defaults for the values
    (setvar     "UCSDETECT" 0)          ;   Dynamic UCS system variable set to 0
    (setvar     "cmdecho" 1)            ;   1 Turns on echoing
;;;
(command "_undefine" "_QSAVE")
(defun c:QSAVE ( / )
    (setvar "CMDECHO" 0)
    (chk_layers)
    (command "-purge" "all" "*" "n")
    (command "_.QSAVE")
    (setvar "CMDECHO" 1)
)
```

# Project tracking

## Work Breakdown Structure Codes

- Develop a list of Work Breakdown Structure Code (WBS Codes)
  - Typically discipline – number
  - Keep the list brief
- Have the team estimate the time to complete the scope of work they've been given

## Internal timesheets

- Have them fill out a time sheet in which hours are allocated to an open project and using an established WBS Code

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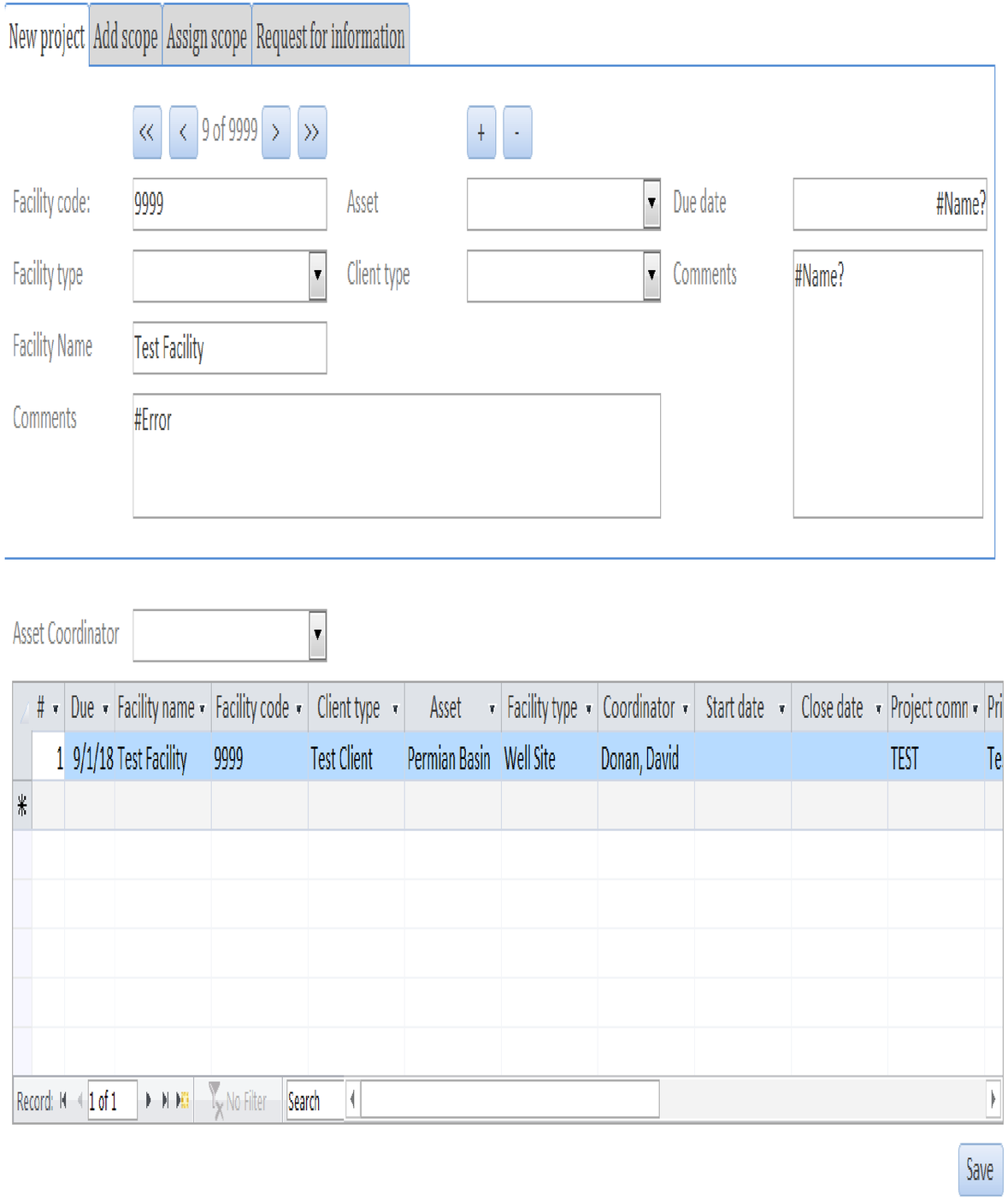
# Setting up a database

- With the following tables
  - Due date
    - tblDueDate: ID, Date, EffectiveDate, TermDate, Comments
  - Priority
    - tblPriorty: ID, Priority, EffectiveDate, TermDate, Comments
  - Project
    - tblProject: ID, ProjectName, DueDateID, PriorityID
  - Scope
    - tblScope: ID, WBSCode, Estimate



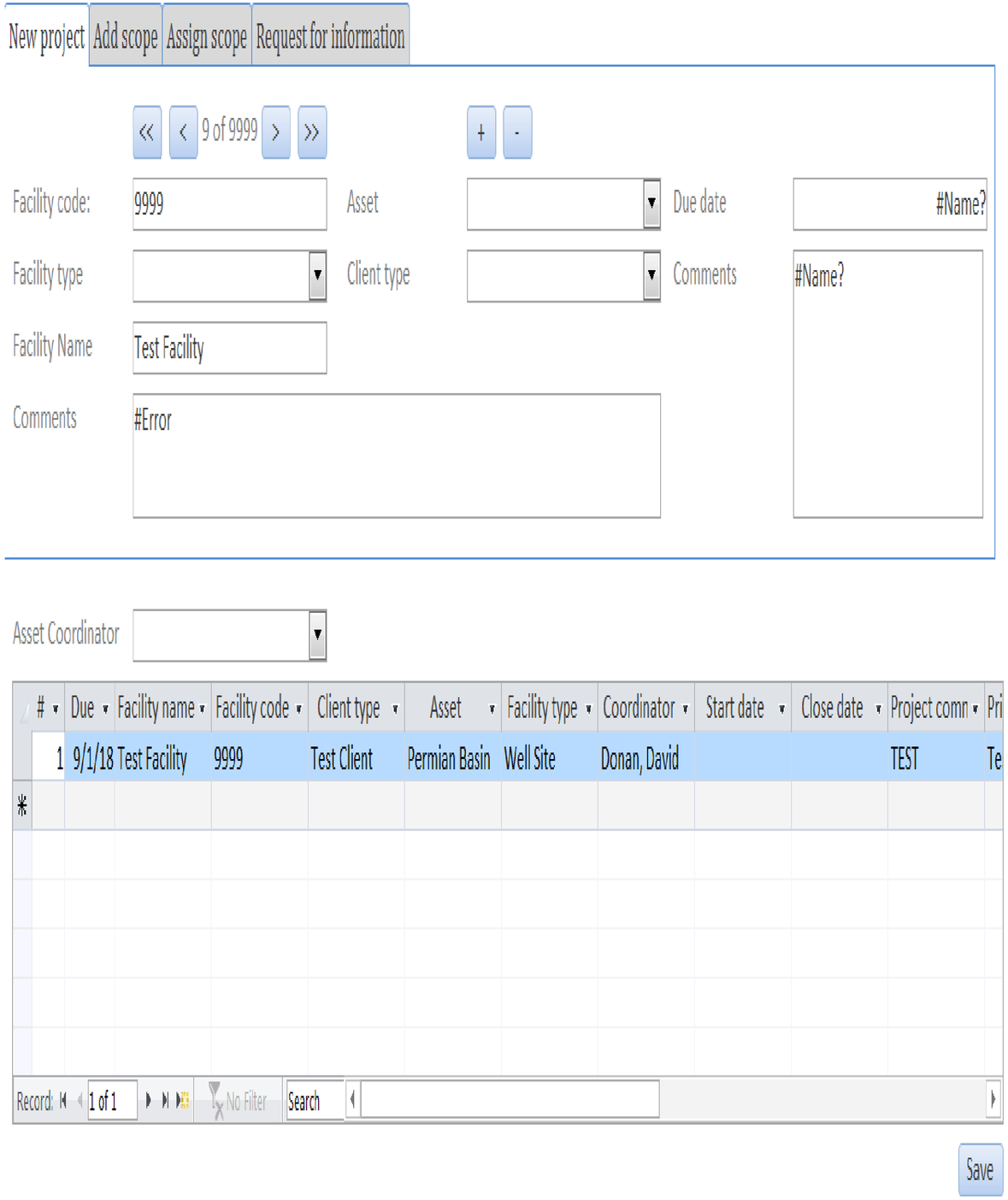
# Project & scope management

## Using the new tables

- Using the projects table, new projects are created
- Scope is defined and added to the new projects using the scope table
  - No limit on the number of scopes that can be added
  - Estimated hours are tracked against labor worked
  - While due dates and priority can be changed by the user, all of the dates and priorities are stored.  The reasons for the changes are also recorded.
- You can add fields to track RFI’s which delay development are tracked, as well as response time

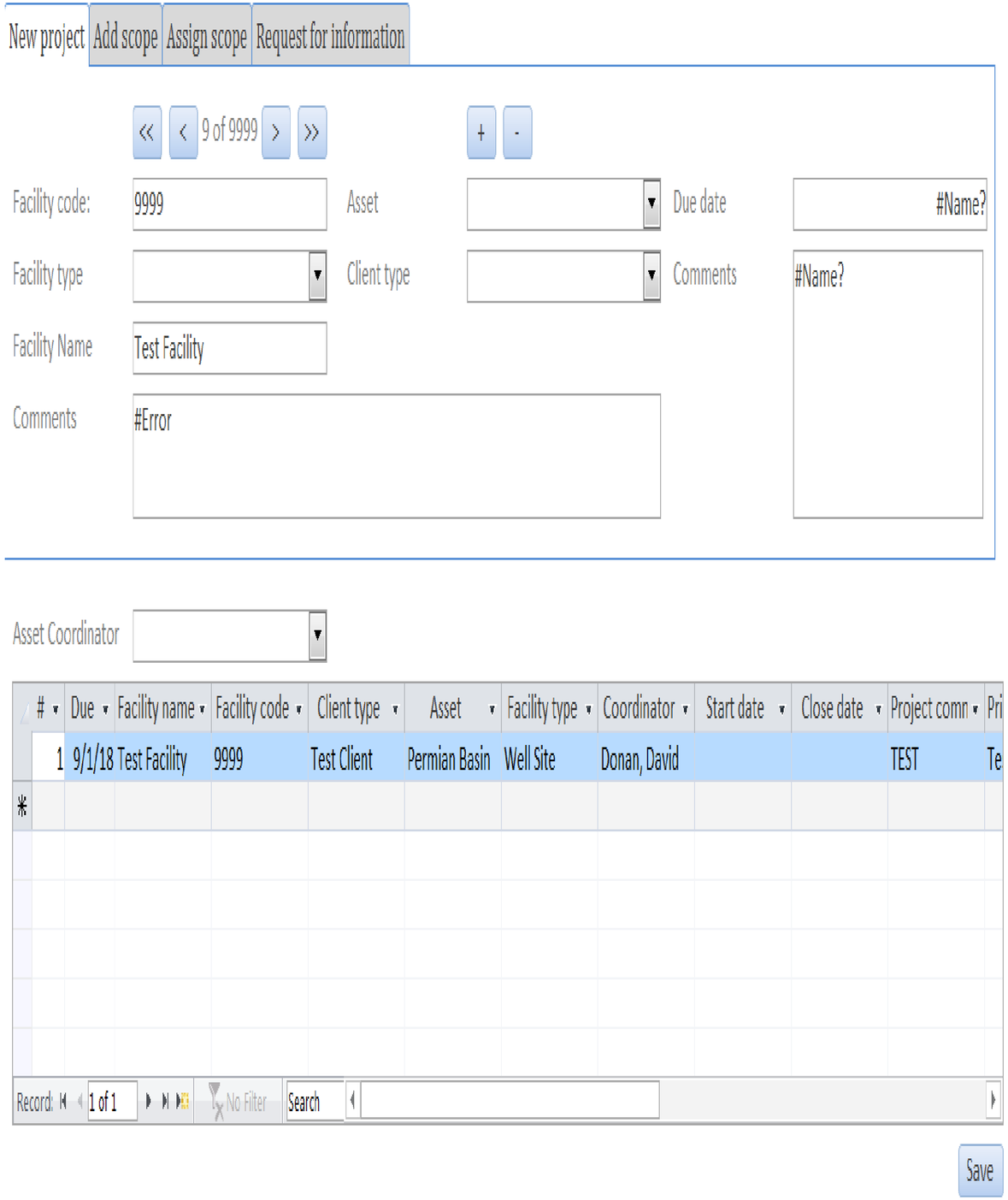
## Advantage of using a database

- Fiscal year schedule can be loaded into the database



# Project tracking scorecard

- Measure improvement of communication in department
- Accuracy of estimates (labor billed to project)
- Accuracy of timeframes
- Impact of scope change on schedule
- Impact of RFI delays on schedule
- Measure the output of the department
- Department efficiency trends



# Conclusion

- Implement a training program for staff and begin building a library learning material
- Automate the maintaining of drafting standards without impacting the current workflow processes
- Developing quarterly scorecards from project management database
  - Track impact of automation
  - Maintain a record of those statistics which show the impact of your intellectual prosperity
- Department career and development KPIs

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