

# CMMI® in a Small Company: The Cobbler's Children Can Have Shoes (and best practices)

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Many of us are like the cobbler.

Small businesses focused on servicing our customers, improving their organizations, and making them look good.

At some point, we have to take care of ourselves too!



*Once upon a time...*

*Once upon a time...*

# Once upon a time...

...a small company called TECHSOFT was formed

- Technical Software Services (TECHSOFT) Inc., founded in 1990 in Pensacola, Florida
- Started as purely software development and maintenance company
- Evolved over 19 years into a true IT company and now provides:
  - Systems engineering
  - Software engineering
  - Security engineering
  - Process engineering
  - Network services
  - Training services (web-based development)

# Once upon a time...

...it was comprised of

- Two offices – Pensacola, FL; Charleston, SC
- 40 employees with diversified backgrounds:
  - U.S. Navy communications and National Security Agency (NSA) computer security backgrounds
  - Serve as certified adjunct faculty at local universities
  - Hold a broad range of Certifications and Technology Competencies
  - Work on ISO/IEC/IEEE systems, software, services, and project management standards

# Once upon a time... ...and it worked for

## Primarily Department of Defense:



NSA



NAVSECGRU



OPTEVFOR



USMC



CC  
Corry  
Station



NCTAMS LANT  
DET Pensacola



NETC



NSGA  
Pensacola



Niceville, FL



Charleston, SC

## Also commercial banks, law firms, health care, universities/colleges:



Memphis & Shelby Co  
Tennessee



University of  
W Florida



Pensacola  
Junior College



Santa Rosa Co.  
Schools



*Making shoes...*

# Making shoes... ...for others

- Early 1990s - 2001
  - Developed software and security engineering solutions
  - Implemented the SW-CMM at several NSA elements and at a U. S. Navy Worldwide Software Support Activity (SSA) in Pensacola
  - Focus was software and later web-based training development
- 2001-2002
  - Engaged by SPAWAR Systems Center Charleston (over **\$2B** a year in revenue) to help them achieve their goal of becoming a World Class Systems Engineering organization
  - Opted to implement the new CMMI® model instead of the SW-CMM

# Making shoes... ...for others

- 2002 - 2009
  - Successfully led organizations to CMMI® ML2 and ML3:
    - SSC-C (ML2 in 2005) (ML3 in 2007)
      - Implemented systems/software processes, training, and established Process Improvement infrastructure
    - General Dynamics Ordnance and Tactical Systems, Niceville FL (ML2 in 2007) (ML3 in 2009)
    - Centurum Inc., Charleston SC (ML2 in 2009)
    - SSC Atlantic – New Orleans (ML3 in 2009)
  - Committed funding and people to CMMI®:
    - 3 authorized SCAMPI<sup>SM</sup> Lead Appraisers on staff
    - 3 authorized CMMI® Instructors on staff

# Making shoes...

## ...for ourselves?

- TECHSOFT was such a busy cobbler making shoes for his customers that he had no time to make some for his own children
  - Why not?
    - Customer work kept us very busy
    - Pursuing CMMI® ML3 for TECHSOFT would be an overhead cost, and small companies cringe at the word “overhead”
    - Concerned with the ROI – would ML3 help TECHSOFT win contracts against Boeing, Lockheed, Raytheon?
    - Employees are already wearing multiple hats
    - Small projects
    - Limited tools
- The “Head Cobbler” decreed that it was time for TECHSOFT to practice what we were preaching
  - Formally started our journey to CMMI® ML3

# Making shoes... ...was the right decision

- Why did we do it?
  - It was the right thing to do
  - It would give TECHSOFT a competitive edge over other small businesses
  - Contract wording was changing to include achievement of CMMI® ML3
  - We had seen the benefits of our customers implementing CMMI®
  - We knew HOW to do it and were using many of the best practices
  - If we did not do it now, we would never do it



*Tradecraft secrets...*

*Tradecraft secrets...*

# Tradecraft secrets...

## ...our strategy

- Goal
  - Achieve CMMI® ML3
- Approach
  - Roadmap: Developed a Process Improvement Plan
  - Share: Developed corporate plans for common areas:
    - Quality Assurance, Requirements Management, Risk Management, Configuration Management, Decision Analysis and Resolution, and Supplier Agreement Management
  - Projects responsible for Project Management and Engineering Plans
  - Set up monthly status meetings
  - Set up progress benchmarks in the form of Class C and B assessments

# Tradecraft secrets...

## ...our infrastructure

- Formally established the PI infrastructure:
  - Management Steering Group (MSG)
  - Engineering Process Group (EPG)
  - Mentors
  - Evidence Custodian
  - Internal Assessors
- Designated the Appraisal WIZARD® as the evidence repository
  - Evidence Custodian was responsible for entry of all data into the Appraisal WIZARD® and maintenance of the evidence files

# Tradecraft secrets...

## ...our infrastructure

- MSG – Department Heads (4)
- EPG – Department Lead Systems Engineers (4)
- Mentors
  - Designated three experienced individuals as PI Mentors to lead the effort for 3 projects
  - Assigned to populate data for OPD, OPF, and OTP
  - Provided mentoring and coaching regarding evidence required
  - Drafted documents as needed
  - Conducted monthly status meetings with Focus projects– senior management involved
  - Identified and tracked action items to closure
- Internal Assessors
  - Identified two other CMMI-experienced employees to conduct multiple Class C assessments and then a Class B assessment

# Tradecraft secrets...

## ...projects' reaction

- Just like the projects at other organizations!!
  - Slow in getting started
  - Not happy about writing plans
  - Struggled with collecting/centralizing evidence
  - Assumed the PI Mentors would do EVERYTHING and they could be bystanders
  - Claimed that they had a REAL JOB to do for some customer

# Tradecraft secrets...

## ...what happened

- Early 2007 - Initial schedule slipped by 3 months
  - Resource constraints/conflicts are real issues
- Mid 2007 – Established/Updated Standard Processes, Process Manuals, and Infrastructure
- Mentoring Projects – documenting project processes and SOPs
- Initial Class B/C project assessments (July, 2008) results were poor! Too many gaps
  - Schedule slipped another 3 months to plug gaps
- Nov, 2008 - Firm dates and Lead Appraiser selected
- Full Class B – Jan, 2009
- Final evidence collection
- SCAMPI A Appraisal held in May 2009
  - TECHSOFT achieved CMMI® ML3



*Moral of the story...*

# Moral of the story...

## ...meeting the schedule

- The project evidence collection effort ALWAYS starts slowly
  - Recommendation: Conduct a Class C within 60 days of commencing the effort. Schedule several Class C's and a Class B
- Only with a hard, firm date for the SCAMPI will the projects start moving faster
  - Recommendation: Build a realistic schedule with multiple Class C assessments/appraisals and then a Class B

Red and Yellow results (weaknesses) from Class C/B assessments get attention

# Moral of the story...

## ...identifying and storing evidence

- The project personnel had good knowledge of processes but limited knowledge of CMMI® and needed help determining which piece of evidence went with which practice
  - Recommendation: Identify Mentors early on to help projects with collecting evidence
- Needed a central location to organize/map to CMMI® and store the projects' evidence
  - Recommendation: Invest in an automated tool (e.g.: Appraisal Wizard®) to collect/store project evidence and be used for the Class C/B assessments, SCAMPI A Readiness Review and On-site

# Moral of the story...

## ...involvement of 'Head Cobbler'

- If left alone, the project personnel would often fall behind schedule
  - Recommendation: Hold frequent progress meetings between mentors, project personnel and invite "Head Cobbler" for additional effect
- With Senior Management support made known to all, personnel who aren't completely on-board with CMMI® may continue to complain, but will still do their part
  - Recommendation: Make sure everyone in the company knows that Senior Management is on-board with the decision. Have Senior Management go directly to Project Leaders and Team Members, and not leave the burden to the Mentor(s)

# Moral of the story...

## ...committed project resources

- Small Organizations need to take advantage of everyone's skills to share the roles
  - Project Manager - involved and committed to success
  - Document specialist/Technical Writer role for coordinating documentation, revisions
  - Active, skilled PPQA manager is a great benefit
    - Can also serve as the Measurement Analyst
  - Useful plans are built by the key players; shelfware is built by the novice or new contractor
  - Don't let one person wear too many hats
  - New technology and complex systems are NOT necessary for success

# Moral of the story...

...be creative with model

- Small organizations/projects can struggle with certain areas (DAR, SAM)
  - Recommendation: Look for creative ways within organization to adapt / tailor the model
    - SAM – “free” software contains license agreements; corporate purchases of equipment
    - DAR – Organization-wide software tools; Charleston office decisions/alternatives
- Shorter duration projects/tasks are difficult to include in assessment planning
  - Recommendation: Consolidate similar projects and on-going tasks into longer term programs for assessment
    - Utilize evidence from multiple tasks to ensure full life cycle coverage

# Moral of the story...

## ...benefits

- What has success meant?
  - New people hired in the last year are up to speed quickly due to the developed processes
  - Improved our overall training in the processes and sub-processes
  - Morale has improved
  - Measurement is more accurate
  - More sharing of ideas and processes
  - Have institutionalized process reviews
  - Now have a formal infrastructure for Process Improvement
  - MSG/EPG now meet regularly every quarterly, thus resulting in improved processes

# Moral of the story...

...it was all worth it

- Took awhile to gain full commitment
- Used the same approach for TECHSOFT that we used for clients
- Don't be surprised by same hurdles faced with clients

*It was all worth it!!!!*

# Any Questions?



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