

***"Better testing of poor reqmts leads to Failure"
 Reqmts incl; success crit; "ilities"; F&F current/future, UI; rept; biz procs; biz rules; ops parms; doc map; RTM; GAPs & changes; rollout plan; test results; sys.stability; go-live checklist; embracing change; rqtg chg tools; defer/tradeoff; trained users; converted data; secure passwords, enabled Ops/ Maint. Groups, etc.

SH ISSUES: -ilities; chg mind; afr'd 2 commit/lv on table; ltd access; Super v naive; geo/site sep; role?; Priority conflicts; 1 focus; too many/few/best unavail

Requirements:

"Why So Difficult -- Still?"

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FLASH: Requirements Elicitation (RE) & Contracting processes likely to become more difficult in future!

Why? bc still 'bout people/disrupt' chg-> malleable/complex & V incent'v to cheat
 --> no universal coherent process & law
 -->think Iterative/Incremental/Interactive!

- RE mandat'd, sched'd, delivs, samples, train'd
- Timely decisions; impact on Crit Path
- Ops, Testing; Support & Maint in early
- E'prise view fm begn -w prop SH class reps for DB, i'faces, legacy, integr, convers'n; O/S serv (9/11 sys)
- What to do re what won't get? Disc up front: What to defer? Next rel.? Next phase? Another Vend? I/H

- RFP Process: Min/Mitgte/Accept Reason 'Risk'
 Have U done it? v How will U do it here?
 How dif?->Obj v How Well Exec'ted?->Subj
 Engage Integr'n people NOT Integ Co. (NOT IBM)
 - Form; Sch; Decis Team; Ov'rseer; Rules; Estim
 - Accept Crit; Reas test? Thresh'ld; SUITABILITY
 - Interp/eval props? nice? =? OOS? min'l rqt? fut?
 - Demo; CRP; PROOF of Concept - SOX
 - Ref Chks; Approp? (How we dif? diff
 imp'tnce? SITE VISIT; L-T relat'shp; Core
 capabil: SDLC, staff'g, New F&F PM, Suppt
 - \$ reasn'ble? \$ lost? Then...? K Process
 - "Do-Over" mtg?; What am I/you so afraid of?"

- Rqts freez; 'Sys works BUT U won't work it'
 BUT-- save \$10m now for next phase, reg'n, div.
 Rqt Elic=Iterat'v, Pareto, ROI, Rapid Proto; BBang
- Many rqtg levels needed fm diff SH:
 - Business - User - IT/SW/OPs/Maint
 - Functional - BPR - o'side constraints
 - QA-Develr - QA-User - QA-Perform
- Biz Case impact; \$ flow; #1 div/prod line
- Many rqtg & priorities CONFLICT!

- SW QA: [-ilities] hw, sw, nw, ARCH
 USERS (External): Avail- Depend-
 Flex- Integ- Modify- Oper- Reli- Robust-
 Use- Scala- Safety- Secur- Surviv- R&R-
 Config- Utility; \$Effect [vs benchm'ks]
 DEVELS (Internal): Adapt- Audit- Deploy-
 Extense- Interop- Maint- Perform- Port-
 Reuse- Test- Struct- Mfg- Interop- Test- Trace-
- ID, clarify & resolve conflicts, tradeoffs, and cost
- Go-Live Commercially Reasonable; NOT Old sys F&F

- BUSINESS REQUIREMENTS:
 -F&F -MoSCoWeD -Tech seq. -Incompl -Disput'd
 -Miss'g -Ambig -Wrong -Chang' -Evolv'g -Unreal'tic
 -Unk (secret) -Implied -Miss'g -New biz procs
 -Unconvent'l -Uninspired -Infeasib' -Unsuit' -Unstab'
- SoS probs: multi-own, new rqtg, fast chg, reuse, >QA
- SoS prin: SH satisfic; evol sys def & SH commit; iteratv sys dev/def; concurr sys def/dev; rsk drv anch-pt mls
- Measurable acceptance crit.; Acceptable error lev

REQMTS -- DEFINE TERMS:

1. Size Stabil - F&F 2.Cust Satis - Who Cares? 3.Resources/\$\$ - Real Bounds
 4. Tech Effect'ess - Reuse, etc. 5. Process Perform - Team 6. Prod QA: -ibles
 7.Sch & Progress - PM (Biz, Dept Mgrs, Eng, Test, Coders use diff measures)



IMPROVED CONTROL:
 - Tight K and def of "success"
 - ^ ROI; Meet Biz Case
 - ^ control \$, Sched.; F&F, QA; meet SH expects; Lo Disrupt/Bumps

LOWER RISK:
 - less req defects; req rework
 - less scope chg; ^ test process
 - ^ dev productiv; deliv usable sys
 - reduce proj. risk; unness F&F

While I take full responsibility for the ideas presented here, I want to thank Barry Boehm, Robin Goldsmith, Roger Pressman & Karl E. Weigers for their excellent books on the subject -- upon which I have relied on over the years. WSReid

- USERS; Partners; PMK; SME; User Classes; Developers; Integrators; Consult'nts; Acquirers; Regulators; Legal; auditors; OPs & Maint groups; Doc. spec'list;
- TESTERS, Project/Test Mgr.; Suppt Staff; Training; Architects; O/S sys team; a Prod Champ/UC i'face w BAnal; Polit'Corr; Sales; Mktg; Field Sup't; HLPdSk; MY MIT genius; smart niece; crazy Bro-in-Law

- a. Curr probs/issues; Ltd knowl' (non-ERP)
 a. Make curr sys better; b. focus 1 type reqt
 c. Bias; they sell something; Don't underst'd prob domain; what have now/upcoming;
 c. Seller PUFF: = to compet; will 'Cust' fund?
- b. PMKs: (SME/Anal)
 c. Devel; Integr; Vend

- d. Competitors
 e. Ind leads
- d. Ref Chk; Biz/goals diff; Site Visit
 e. What others do/how well?
 What's next? Who's next
- f. "Enablers" [disruptors']; web 2.0; broadband/mobile; RFID; SaaS; PDA/ smart fone; O/S; SOA; Open Source
- g. Confid; global; chg'g biz/vision

- RE TECHNIQUES:
 I'views - 1->many; b'storm; survey/?aires; doc; anal; site visits - cust, vend, Refs.; BP/wkflow/ task anal; compet prod anal; les'n learned; UC-->F&F; demos; MBWA; event; Rev/Inspect/ Walkthrus; resp't 4 ENG proc's
- TOOLS: est.; RTM, track'g; chang; test'g
- SKILLS REQ'D: listen; question, probe, learn; facil, collab; organiz; abstract/trace/ order, model; creativ; interpersonal, promote, lead, comun; smart, learn/know domain lang; prev. devl, user, SME

- STEPS: Elicit, Anal, Spec, V&V, Maintain(able??)
- E: plan, scope, ID SH, train, RE; A: Use cases, conflicts, addtl, global v local; S: formatted, models, graphics, SgnOff, reposit'y; V: Rev, Insp'ct, WkThr, test, Acpt Crit; M: Rqts, RTM, SOs, key, resol, Issues, ToDo, wiki, access; WBS/est., Org Ch; staff, tools/meth/PM, conting, Stat Rpt'g; Rules: RFP; Gov't K; SBP alignmt IT/Rqts Guid'g Principles; DONE? No new use cases; repetition; cosmet, OOScope

Human Factors CAN Ripple RE!

- Digital Natives v Digital Immigrants
- Collective robustness
- Selective automation
- Fatigue avoidance
- Multitask avoidance
- Risk homeostasis
- Human/system symbiosis
- Yerkes/Dobson law
- Human arousal curve
- Sys predict dependable
- Organization Cultural, Social Changes can > human error - alot

Thanks to Dr. G Smalls Dr. A Madni

PEOPLE: All Feedback Loops Taken

- Negotiating skills are impl/required
- Need to appreciate goals/obj. of others
- Wk top-down to details iteratv to < anal paralysis
- SME's/anal need to approv' progress
- Even w 1/3, 1/3, 1/3 you must still use Iterative & Evolutionary appr'ch: to avoid "large" fails; to suppt sys that contin'ly grow; as a risk mitigation strategy
- CHI: Comp-human-interact'n: reality on reqts

PROCESS: Purposeful Explor/Pain Factor

- Est \$, time, resourc, risk to meet reqts.
- Ests wrong b/c: reqs alone may not be enuf to est; no good est meth; politics/games
- \$ = resourc X effort. Not what u wish it was!
- Dev hi-lev prod design to meet req; def tasks to produce ests, resources, effort, duration to perf tasks. COCOMO II, FPs, etc.
- Criticality/Min-Target-Ideal stds
- \$\$ to fix 'BAD' rqtms grow EXPONENTIALLY!

NATURE OF REQUIREMENTS:

- Technology (screen/rpt/db layout) v Technological (access via www, use co's o/s, nw, dbms, dev tools, GUI, etc.)
- NO forget: BU/R&R; Secur; BPR new flows; Install; Train, Doc, Help; 3rd p'ty access; regs;
- QA= How Much? How Well? (min, des, idl)
- Eng stds: Dimens'n - #custvol/equip sz/wgt; Phys props - protocols, iface, envim cond; Appearance - GUI, layout, readabil; Perform Nat -Critical'ly (Maj/Min/Incidntl); AT Lev-Min/Trgt/Ideal
- Waterfall has ltd. use (compilers); **ID is it!**

OTHER CHALLENGES: HF E, SOS

- Meet of minds & K w SoS=hi-depend+rapid adapt 2 freq chg? (avg sys chg rate + impct of chgs + # sys in SOS)
- SoS:future transformational net-centric sys w/hv # usage uncertainties & emergent char
- Req. build 2 specs + concurr agile, chg/adapt'ion + risk-driven procs + V&V = alterm K meth
- No clear boundaries bet R&D & Ops & Maint.
- SDLC must adapt to contin increm & evol'n acquis & delv
- Horizontal Reqts HARDER THAN Vertical Reqts.
- Trad Sys Dev --vs-- (SOA) NewTech Sys Dev
- Tight coupl'ng btw sys compon - Loose coupling Shared semantics@design time - dynamic discovery
- Sys compon within 1 org -- multi-org suppt componets
- Known set of users/usage patterns - Potent unknk serv users

HUMAN FACTOR DESIGN Dec isions:
 Risk Homeostasis: built in human risk tol (Dr. A.M. Madni)
 QA has no set def of success
 Can't coll ectively max all QA atribs (conflicts)
 Essential v Accidental v Optional complexity
 man-machine i'face v impl' complexity

NSIGHTS/FINDINGS

- Make RE & eval goals clear for STAKEHOLDERS
- Scenarios > underst, and Stakeholder consensus
- Culture influences RE and prioritization
- 25% > in prob complx can = 100% > solut cmplx
- Usability = Learnability + efficiency
- Poor RE/DES/Err ID procs & > proj = >sch + \$\$ + rework