

# The Nine Pillars of Software Development/Implementation Project Success

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## Pillar # 1 – Implement Proper Project Management (“PM”)

**PM** requires the Systems Integrator (“SI”) to employ industry best practices and leading development/implementation methods to manage risks, staff, schedules, quality, scope, stakeholder expectations to steer project to success.

**Good Project Managers** (“PMs”) determine and communicate accurate status, incl. data re productivity, meeting milestones, problems/issues, and updated completion dates to enable parties to create/implement good solutions effectively. They anticipate, monitor, manage/mitigate risks & assure proper quality is built into the system. PMs must properly plan, organize & direct resources to deliver a quality, “suitable”, production-ready product.

**Project Leaders** align the necessary parties around a shared, empowering vision. They see around corners and set the standards of excellence.

## Pillar # 2 – Create Suitable, Attainable Estimates and Schedule

Systems Integrators (“SIs”) employ industry-standards, their own history on similar projects, and/or best-in-class tools to estimate project cost, resources & schedule. A work breakdown structure (“WBS”) is built reflecting all planned development tasks, task precedence, effort estimation for each task, resource assignments to tasks, and projected task start & end dates.

PM analyzes & reports progress against the project’s **critical path, deliverable dates, earned value; revises** estimates/schedule as assumptions, constraints, facts change.

## Pillar # 3 – Assign Properly Qualified & Experienced Personnel

Assigning appropriately skilled, experienced and qualified SI and Customer project team members, and holding them responsible/accountable for their assigned tasks & deliverables quality, is critical to project success. This pillar requires SIs to **define the responsibilities and skills required in the project** and assign staff with requisite qualifications/expertise as needed — necessary skills change over the project’s life.

Customer must designate a Project Champion and assure project team members are assigned full time, trained to carry out new functions, and empowered to make proper reqmts and design decisions. Controlling staff turnover is important to minimize the loss of internal project-continuity & subject-matter knowledge. Assess staff augmentation.

## Pillar # 4 – Gather, Understand & Manage Requirements

The SI elicits functional, business, GUI & technical requirements. It demonstrates a preview (prototype) of those customer reqmts, to ensure common understanding of systems scope, capabilities, flow, controls, and operational impacts. Customers with only old legacy system savvy must learn the abilities of today’s systems to best contribute. Team must rigorously control requirements/scope growth. Requirements come from the following:

- Customer’s RFP & the SI research performed to prepare its Proposal;
- Pre-selected reference site visit & interviews; plant visits;
- JAD/reqmts elicitation sessions, hands-on prototypes, fit-gap analyses, configuration options;
- SI own expertise/experience from configuring & implementing similar systems;
- Research trends in the customer’s industry domain, and available new technologies.

A Requirements Traceability Matrix (“RTM”) helps ensure reqmts are served in each project phase. RTM traces reqmts from design, code, test, train, document and back.

I. Implement Proper Project Management

V. Follow Good Software Development Methodology

II. Create Suitable, Attainable Estimates & Schedule

VI. Perform Proper & Complete Testing

III. Assign Properly Qualified, Experienced Personnel

VII. Conduct Training; Ensure Learning

IV. Gather, Understand & Manage Requirements

VIII. Communicate Fairly & Honestly

IX. Deliver “Suitable” Production-Ready “SYSTEM” & Go-Live Support

## Pillar # 5 – Follow Good Software Development Life Cycle Methodology (“SDLC”)

SI must adopt a valid SDLC—i.e., a defined structure/sequence of interrelated phases, tasks and deliverables to ensure software engineering/development practices promote high-quality software, prevent or find/fix defects early in the development cycle, and help the project come in on-time, on-schedule & on-target. Best SDLC usage by experienced teams matches requirements to delivered functionality, reduces defects, improves quality & mitigates risks —ultimately providing shorter delivery times, better value & systems with more non-functional “-abilities” (i.e., avail-, maintain-, reli-, port-, etc.). Best SDLC should not be abandoned to make up project slippage without thoughtful risk identification/planning.

SDLC “best practices” published by PMBOK, SWEBOK, IEEE, SEI, etc. are quite similar because successful system building, one way or another, requires the pillars presented here.

Accepted SDLCs include: Waterfall; Spiral; Prototype; Agile, Scrum. Each is right or better for specific, different circumstances. The best SDLCs have automated tools, templates, re-usable objects linked to SDLC steps.

## Pillar # 9 – Deliver Production-Ready System & Post Go-Live Support

A software project aims to deliver software that meets customer requirements (functional, technical, non-functional “-abilities”, operational, security). The delivered system should be free from material errors/defects, and straight-forward to use, maintain & upgrade. It should help the customer achieve its business case, and measurably improve efficiency, decision-making, customer and vendor relationships, profitability. A proper data center, maintenance and operations teams must be in place to accept the system and maximize its value to its stakeholders in production.

## Pillar # 6 – Perform Proper and Complete Testing

Testing is critical for delivering high-quality production-ready software. Test planning starts during Requirements Phase continuing through the life of the system. Testing principles, techniques, tools, and discipline are well-known in software development. Use trained, certified testers for reliable results. Assign them to project early.

Testing short-cuts must be carefully assessed, with risks calculated/communicated first. Distinct testing types include: black box; unit, integration; interface; conversion; systems; performance; security; & user acceptance tests. Testing is performed in levels and should proceed only when predecessor test level meets agreed exit criteria.

**Regression testing** ensures that the process of finding/fixing defects does not create new defects. Defects missed in lower test levels are not specifically re-tested in higher levels. Thus latent defects are very hard to find/fix after software is promoted to next level (oftentimes requiring 10–100X effort). **Regression Tests** should be automated for efficiency and effectiveness and turned-over to **Maintenance** for continued use.

## Pillar # 7 – Conduct Training; Ensure Learning

Training is essential for successful Go-Live. It helps avoid system transition rejection, errors, instability & overtime. Without relevant, thorough, timely hands-on training & follow-up, proper/successful use of the new ERP in an environment of reengineered business processes and organizational changes **is not possible**. Process leads, Super- & End-users need different content/training to properly perform their new roles.

Super-Users are often the best staff in their departments. Make sure they are assigned enough time to be properly trained and that they aren’t asked to leave class to address problems at the plant or office.

Training manuals, practice sandboxes w converted data & job aids are used/left behind for refresher training. Training how ERP modules relate and how data entered in one module triggers a function elsewhere is also important for smooth operation of system. Teaching error message responses & “fire-fighting” processes are key too.

## Pillar # 8 – Communicate Fairly & Honestly

This pillar requires SIs to align their interests to customer interests to minimize deviation in goals. SI must use techniques of timely, open/frank communications & remain vigilant against distortion, omissions, dishonesty, and unwarranted optimism.

Communications must meet industry standards, and report intelligent, actionable information and metrics that measure “real” progress and identify risks and predicted risks. They must address issues re project status, productivity & product quality, and convey actions needed to be taken re schedule, resources, cost, quality, scope, risk, tools, exceptions and expectations.

Metrics used to track performance, progress and risks must be **SMART**: Specific; Measurable; Attainable; Realistic; Trackable.