



# **Delivering Successful Projects with challenges of New Teams**

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# Who am I?

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- Microsoft - 7 yrs
  - n Quality Program Manager in Windows Live Platform working on Quality of Service for 2 months in Microsoft
  - n Quality Manager driving TSP/PSP, Six Sigma, Metrics and process standardization for 2 yrs in Microsoft India
  - n Worked in Outlook for 5 yrs in Microsoft Office group US
- MNCs in India implementing CMM level 3-5, ISO 9000, Poka-Yoke, etc
- CSQA, CSTE, CQA, CQIA, Six Sigma Black belt, Master-SEI CMM Implementation, Master-Microsoft Office Specialist, ISO 9000 Internal Auditor, SEI authorized PSP Instructor & TSP Coach



# Key Challenges

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- Predictable: Delivering *right* software at the *right* time
- Global Competition, Attrition, domain knowledge, new teams...
- Right model to use: CMMI, ISO 9000, TSP, Six Sigma
- Guessing how long will “It” take to build before we know what “It” is
- Global model, geographically distributed teams, time-difference language & cultural difference, work-life balance...
- Do we have time/budget to invest in building team chemistry
- Project uncertainty: # of bugs, scope of rework effort
- Myths: “We don’t have time to do inspections or reviews” “Increasing quality will increase costs and lower productivity”  
**>> We don’t have time to do it right?**



# The Personal Software Process (PSP)

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- **Personal Software Process:** The PSP provides specific guidance on how engineers can continually improve their performance based on standard software practice.
- With PSP, engineers
  - n Are process users and owners
  - n Routinely estimate and plan their work
  - n Gather data for tracking and improvement
  - n Manage quality at every step of the process
- If you are familiar with the SEI CMM, think of PSP as an instance of a Level 5 process for an individual.



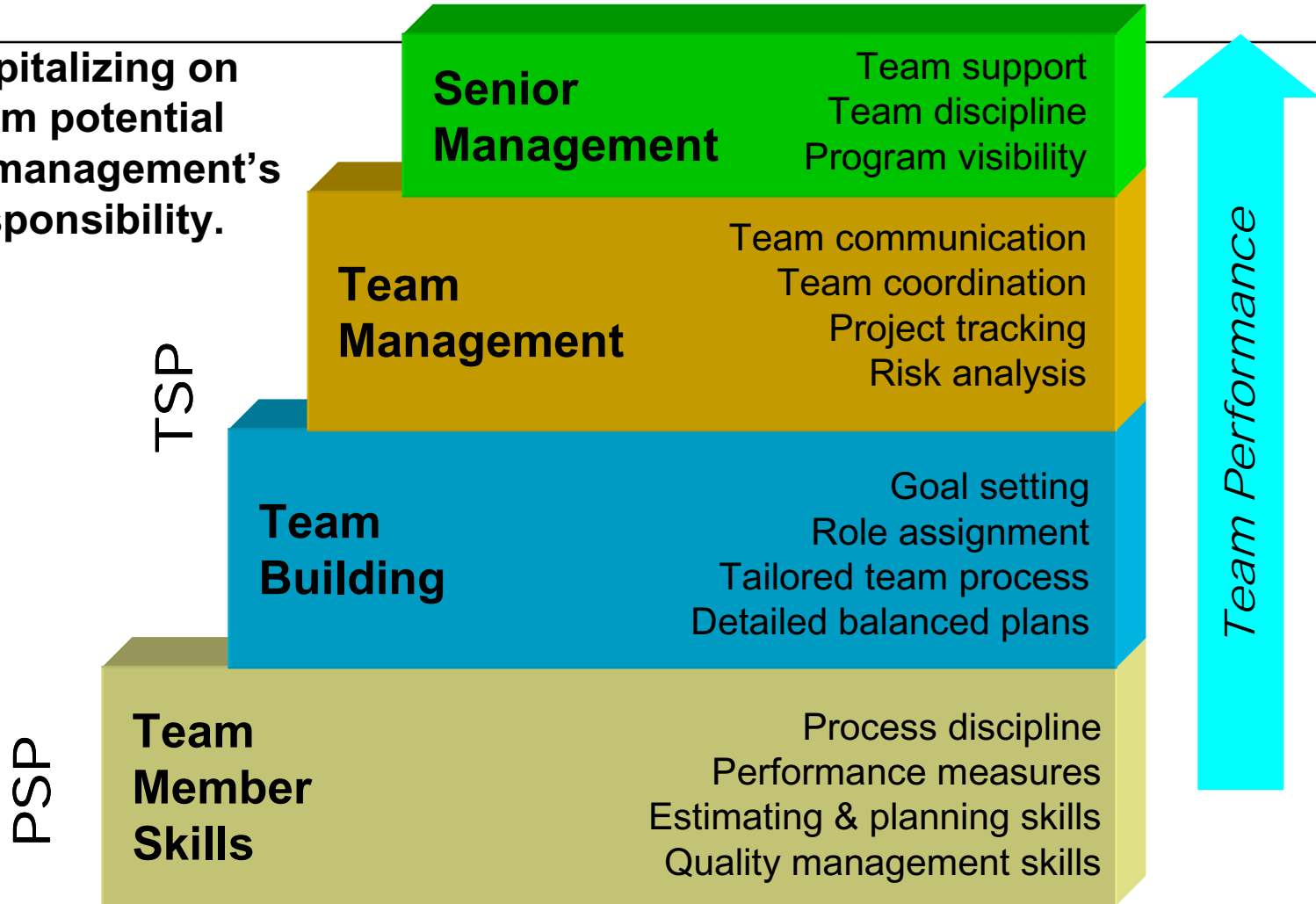
# The Team Software Process (TSP)

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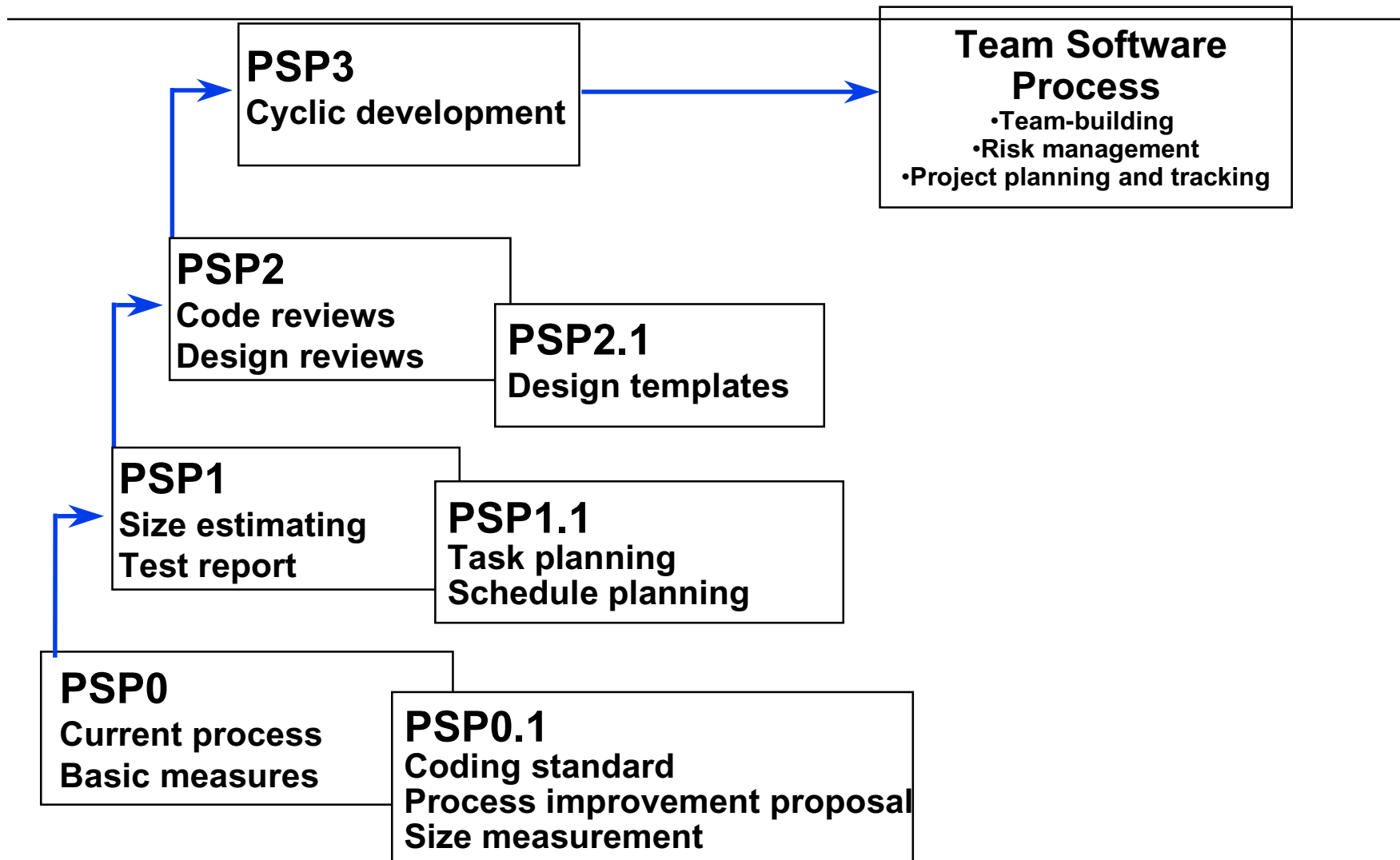
- **Team Software Process:** The TSP provides specific guidance about how PSP-trained engineers can work as effective team members on a high-performance engineering team that develop software
- PSP process discipline is a prerequisite for TSP
- TSP supports
  - n All types of activities: development, enhancement, and repair
  - n Self-directed, interdisciplinary teams
  - n Statistical process control
- If you are familiar with the SEI CMM, think of TSP as an instance of a Level 5 process for a team.

# Building & Managing Self-directed Teams

Capitalizing on team potential is management's responsibility.



# Learning The PSP

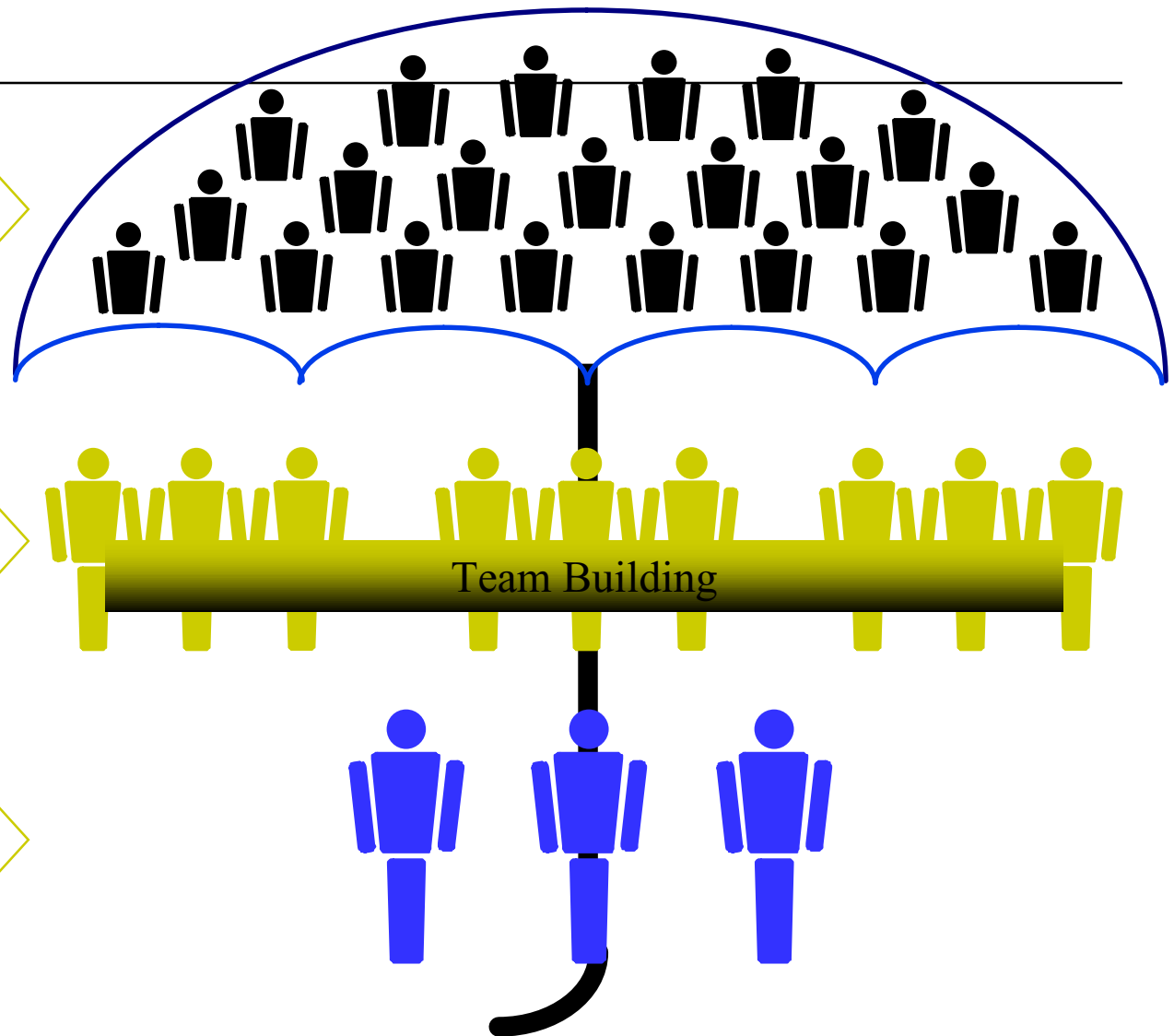


# TSP, PSP, and the CMM

**CMMs - Build organizational capability**

**TSP - Build quality products on cost and schedule**

**PSP - Build individual skill and discipline**







## Questions: 5W / 1H +

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- Why Why is this project important
- What Know what to deliver
- When Schedule/timeframe
- Who Roles and responsibilities
- How How are you going to build it
- What can go wrong?

# Productivity

$$\text{Productivity} = \frac{\text{Quantity}}{\text{Efforts}}$$

$$\text{Higher Productivity} = \frac{\text{Quantity}}{\text{Less Efforts}}$$

Quantity

Efforts [ (Engineering + Management + Training + Communication) X Re-work ]

- Technology
- Domain
- Application
- Understand
- Coding
- Testing

- Estimation/Planning
- Team Management
- People Conflicts
- Status reporting
- Manage Expectations
- Attrition & ramp up

- Organization
- Technology
- Quality/Process
- Application
- Project

- Email
- Conf calls
- Meetings
- Lingo/protocol
- Project Status
- Quality

- Quality Problems
- Communication gap
- Unclear requirements
- Code without design
- Conflict resolution
- Reinventing wheel



# Knowing what to deliver and why

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- Knowing the right project priorities and goals
  - n **Reliability** – Retain market share
  - n **Feature Set** – First product to claim majority market share
  - n **On Time** – Time critical application (e.g. Tax software)
  - n **Cost** – Remain competitive
  - n **People** – Roles and responsibilities, Work-Life Balance
  - n **Project Management** – Predictable? Are we there yet?
- This is the project kick-off meeting
  - n The launch coach & team lead explains the TSP process
  - n Management presents project goals, objectives and priorities to the team
  - n Team understands management goals and importance of the project, identifies team goals, roles and responsibilities – no confusion

*Team members get to know each other and management (which is challenging in global model) and the team members (new and old) fools n rt of the project*



# Process, ground rules

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- Traditional way of preparing the project plan
  - n Prepared by project manager, team is usually not involved
  - n By arranging features into milestones based on schedule
  - n Not enough effort spent on understanding requirements, design, development strategy, process – start coding
  - n Team process, protocol, ground rules are not thought of
  - n Problem arise due to lack of standard process along with new people
- The team brainstorms and comes up with
  - n Conceptual design, Development strategy & Processes
  - n Team processes, communication plan, protocol, tasks for each roles
  - n Plan to ensure frequent reviews, conf calls, shorter cycles to bridge any communication & understanding gaps

*Every member of the team is involved in the discussion, they feel empowered and are taking decisions for their own project*

# Estimating

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- Targets vs. Estimates vs. Guesstimates
  - n *Hallway/ball-park estimates commitments*
  - n Size estimates are skipped and schedule is prepared working backwards from target. Are you estimating or figuring out how to meet target?
  - n Learning from past? (*This project is different, cannot use historical data*)
  - n Planning for 40 hrs/week? Meetings/trainings/vacations/Ramp-up?
- Each member of the team gets involved in brainstorming for
  - n Work break down structure with size for reqmt, design, code, test cases
  - n Use historical data wherever available (productivity, quality)
  - n Team member availability (meetings, trainings/ramp-up, vacation)

***The team starts jelling together and contributes to creates their “own” project plan to meet mgmt goals – team feels very confident in delivering on the plan***



# Quality

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- What can we do to have high Quality product?
  - n Can we plan for defects? How many defects will be introduced? What phase will catch defects? how many defects will slip?
  - n There is a huge disconnect between Dev/Test/PM on quality which often result into conflicts/finger-pointing impacting the team and deliverable
  - n How many defects will be found by reviews or inspections?
  - n *Is testing complete? Have you found the last defect?*
- Dev, Test & PM work together and prepares the quality plan
  - n No finger pointing, understand each others limitations and comes up with plan to have quality checks in place to detect defects early and fix
  - n Use historical data on defects (Defects injected/per hour & Phase yield)

*The team break barriers between dev/test/pm and work together to plan for a quality product, this minimizes conflicts during the development cycle*



# Individual plans

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- Project plan
  - n Project plan is usually a high-level team plan
  - n Are all individuals same? Same productivity/availability/experience?
  - n Does everybody know what tasks they are responsible for?
  - n Are project tasks of appropriate size for tracking purpose?
  
- The team leader along with the team members do the following
  - n Allocate tasks, apply individual productivity for effort & end dates
  - n Adequate reviews/inspection/testing tasks are planned
  - n Arrange tasks for dependencies & load balancing to ensure end dates for every individual are close to major milestones

*Each team member is aware of the work to be done and has planned his/her own work. This brings in better commitment compared to Plan from Manager*

# Risk Planning/Management

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**Murphy's law?** *If anything can go wrong it will go wrong*

- Have we identified all the risks that may impact the project?
  - n New or Beta Technology?
  - n Requirements not clear or changing? Scope creep?
  - n Risk planning done – what about tracking and responsibility?
- Team identifies the risks and plans for its mitigation
  - n Identify risks, evaluate impact and probability
  - n Assign owner for tracking, track each risks weekly
  - n Prepare risk mitigation plan

*By now, the team have got good understanding of the full project and the plan – they can now think of potential risks and plan for its mitigation*





# Get, Set, Go...

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- What do we present to management?
  - n Schedule and dates? Is the schedule and effort acceptable?
  - n Is management aware of assumptions and risks?
  - n How was the project plan prepared?
  - n Does management have all information needed to help team
  - n Can the team meet management goals?
- Team discusses their project plan with Management
  - n Project Plan: Deliverables, Schedule, Effort, Process, Quality, Risks, Assumptions, alternatives (if any)
  - n Management acceptance, formal “GO” to start project

*The team have came up with a plan on how they can deliver a quality product as per Management expectations. This gives confidence to management and also demonstrates team & management commitments to the project*

# Capturing data for all the activities

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- Data capturing/tracking
  - n How much time was spent on this task? 5hr/8hr?
  - n What was the size of work product produced
  - n How many bugs found? What phase injected and removed?
- If we don't measure – we can't manage & improve
- TSP – data logging:
  - n Time and size logged for every project task
  - n Every defect logged – Injected & removed phase, effort, etc.

>>> **DATA NOT SHARED WITH MGMT**

*Each team member is able to see what work he/she is expected to do in what time frame to ensure the project is on track. Logging they critical data helps them to take course correction at appropriate time*



# How are we doing?

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- Project status
  - n Problems do not arise overnight – slow accumulation
  - n We are doing great - we are 90% complete
  - n Do we accurately know where our project is? are we on track?
  - n Are the stakeholders aware of the project status?
  
- TSP Team Status Meetings – Weekly
  - n Weekly meeting watch the right parameters and take appropriate action
  - n Plan Vs Actual (earned values, task hours, quality, etc.)
  - n Risks, defects, phase yields & PQI for modules

*The team meets on a weekly basis and analyze their progress against plan, all key data points are reviewed with the TSP Coach and take appropriate actions. A status report highlighting project progress is sent to management.*



# Mistake-proofing (Poka-Yoke)

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- Natural for humans to make mistakes – no finger pointing
- People do not say, “I want to make mistakes”
- Murphy’s Law: “*If anything can possibly go wrong, it will go wrong*”
  
- Mistake-proof / Poka-Yoke
  - n There is only one way to do it – the right way...
  - n Solves the problem of “not enough time to follow the process”
  - n Prevent / Detect and immediately correct



# TSP in Microsoft India – Results

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- 600 people (270 dev + 330 test/pm) trained on PSP
- Total 70+ projects launched and completed on TSP
- Results Summary
  - n High Predictability (93% project – on-time delivery)
  - n High-Quality Project Delivery (66% projects - zero-defects)
  - n Rework time reduced by more than 50%
  - n Better Work-life balance (based on survey)
  - n Individuals have better control over their work – they can plan, track and take corrective action whenever needed.
  - n Managers have good information about health of the project.<sup>21</sup>

# TSP Learning...

Non-TSP	TSP
Project Plan developed by Project Manager	Team develops the project plan – high confidence & commitment to meet the plan
Estimates are usually guesstimates	Estimates are based on historical data OR engineering judgment
Long office hours	Predictable office hours (40-50hrs) Better work-life balance
Problems and issues are found very late in the project	Weekly meetings help the team to find problems very early in cycle
Usually 3-8 bugs in UAT + Production	Much better quality (64% projects with zero defects). Defects are found early in the cycle
Fire fighting to meet deadlines. Schedule slippage and poor quality	Objective Project management based on data.



# Messages to Remember

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- The key to TSP success is management priority and support
  - Emphasize that management has selected the TSP as a new direction for the organization
  - TSP enables all disciplines Dev/Test/PM to come together
  - Stress the opportunities to:
    - n Provide TSP experience for the entire organization
    - n Establish a benchmark for future teams
    - n Learn a new and exciting technology
  - TSP is not just another Quality Standard/Methodology
- TSP is Six Sigma applied to Project Management and Development with inbuilt Team process to deliver right product on the right time – every time***



# Conclusion

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- Several quality models – Which one is the right one?
  - n Take the best from all
- End goal:
  - n Shipping reliable software with right set of features on time and under budget with a decent work-life balance
- Operational Goals:
  - n Do not spend your effort and time in repeating mistakes
  - n Make new mistakes and prevent future mistakes
  - n Build a predictable process
  - n Improve operational efficiency for stakeholders
  - n Keep your teams motivated and committed





# Contact Information

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