Multiple Simultaneous Appraisal Experience
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Software Technology Transition

Topics

- Overview

- Tata Consultancy Services Ltd. (TCS)

- TCS Clients

- What is a Multiple Simultaneous Appraisal (MSA)?

- MSA at TCS

- Success Factors

- How Big Was The MSA?

- Planning Considerations

- Benefits

- Challenges Faced

- Considerations for Users of MSA

- Further Considerations SEI Might Take

Overview

- This presentation explains the concept of a Multiple Simultaneous Appraisal (MSA)

- It shares experiences of a large Multiple Simultaneous Appraisal, conducted in Tata Consultancy Services Ltd. (TCS), using CMMI-DEV and CMMI-SVC concurrently

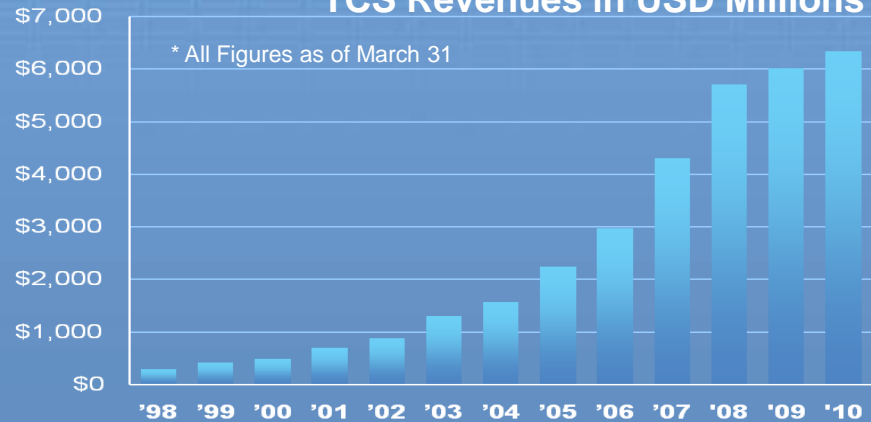- It further lists some considerations to be explored for Multiple Simultaneous Appraisals

[R] Capability Maturity Model, Capability Maturity Modeling, CMM and CMMI are registered in the U.S. Patent & Trademark Office.
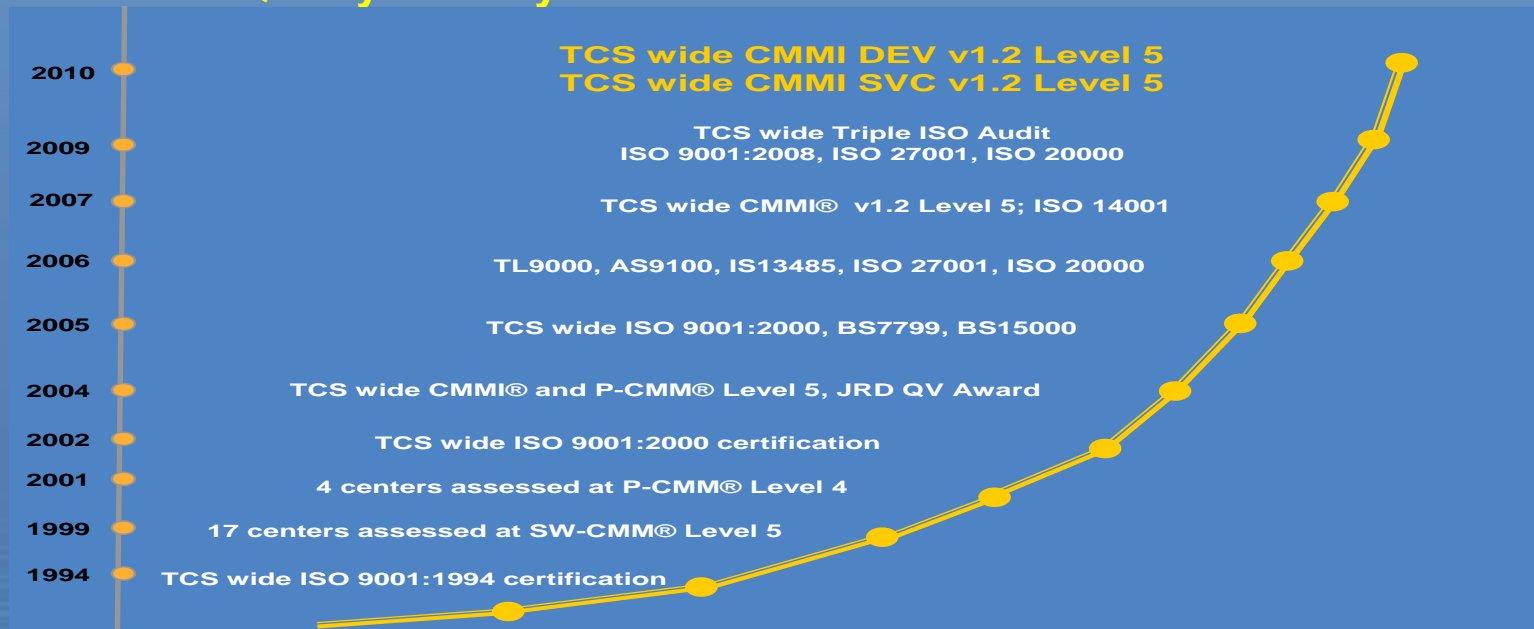
Tata Consultancy Services Ltd.

Corporate Facts

> **Established in 1968**
> **FY 2010 revenue of USD 6.34 billion**
> **Over 142 Offices in over 42 countries**
> **First and Largest**
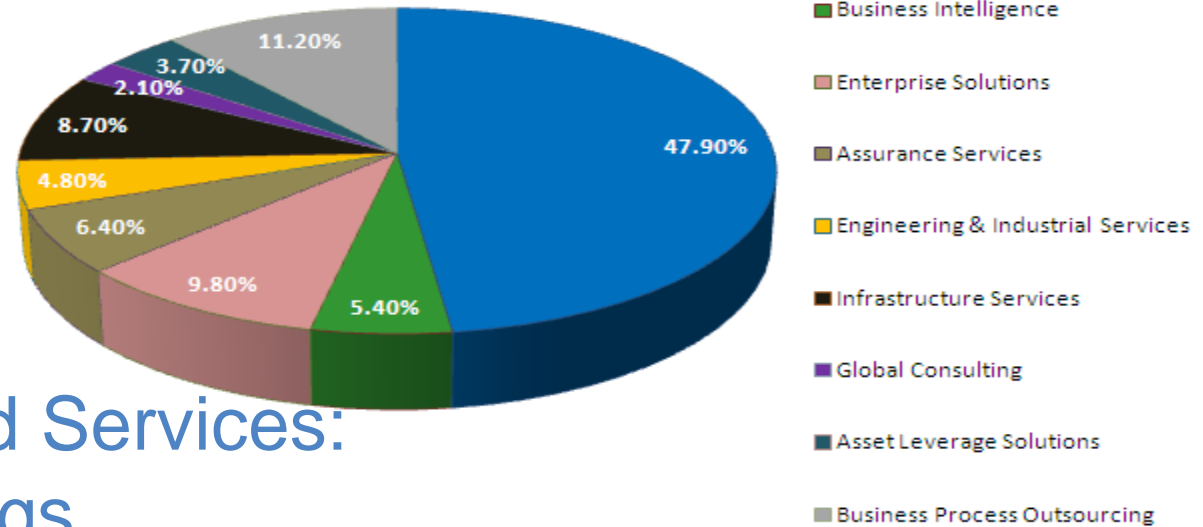>> **Software exporter in India**
>> **Software R&D centre in India**

TCS Revenues in USD Millions

* All Figures as of March 31

$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0

'98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10

TCS' Quality Journey

Year	Milestone
2010	TCS wide CMMI DEV v1.2 Level 5 / TCS wide CMMI SVC v1.2 Level 5
2009	TCS wide Triple ISO Audit / ISO 9001:2008, ISO 27001, ISO 20000
2007	TCS wide CMMI® v1.2 Level 5; ISO 14001
2006	TL9000, AS9100, IS13485, ISO 27001, ISO 20000
2005	TCS wide ISO 9001:2000, BS7799, BS15000
2004	TCS wide CMMI® and P-CMM® Level 5, JRD QV Award
2002	TCS wide ISO 9001:2000 certification
2001	4 centers assessed at P-CMM® Level 4
1999	17 centers assessed at SW-CMM® Level 5
1994	TCS wide ISO 9001:1994 certification

TCS Current Engagements

Legend:
- Application Development & Maint. — 47.90%
- Business Intelligence — 5.40%
- Enterprise Solutions — 9.80%
- Assurance Services — 6.40%
- Engineering & Industrial Services — 4.80%
- Infrastructure Services — 8.70%
- Global Consulting — 2.10%
- Asset Leverage Solutions — 3.70%
- Business Process Outsourcing — 11.20%

Development and Services: Some key offerings

IT Services	IT Infrastructure Services	BPO
➢Custom Application Development ➢Application Management ➢Migration & Re-engineering ➢System Integration ➢Testing ➢Performance Engineering	➢IT Service Desk ➢Data Center Management ➢End User Computing Services ➢Application Management Services ➢Managed Security Services	➢Customer Interaction Management ➢Finance and Accounting ➢Human Resources Outsourcing ➢Knowledge Process Outsourcing ➢Supply Chain Management ➢Reconciliations ➢Benefits Administration ➢Payroll ➢Industry Specific Offerings

What is a Multiple Simultaneous Appraisal

MSA is

- An appraisal conducted using more than one CMMI® constellation (DEV, SVC and ACQ)
- Carried out in the same appraisal period with one ATL

SEI requirements

- Appraisal to be completed within the 90 day Phase 2 constraint of SCAMPI^{SM} - MDD
- 2 or 3 separate SAS entries
- 2 or 3 separate Appraisal Plans
- 2 or 3 final reports to be submitted

^{SM} SCAMPI is a service mark **of Carnegie Mellon University**

Multiple Simultaneous Appraisals at TCS – Need

- TCS appraised enterprise-wide in 2007 against CMMI-DEV 1.2 and 3 year PARS recording was to end in 2010

- With the release of the CMMI-SVC model and with TCS having offerings in the development and service domain, it was appropriate to include both CMMI-DEV and CMMI-SVC for the re-appraisal in 2010

- Separate appraisals against the two constellations, done serially would have a large impact on the organization, hence the need for MSA

MSA conducted for TCS, Enterprise wide, using multiple CMMI® constellations – CMMI-DEV and CMMI-SVC during the same appraisal period

Multiple Simultaneous Appraisals at TCS - Approach

- A seamlessly integrated appraisal approach, ensuring full compliance to SCAMPI^{SM} v 1.2 method, keeping the identity of CMMI-DEV and CMMI-SVC constellations separate through the MSA, without compromising the purpose of two individual appraisals, in any way

- MSA conducted by a trained, qualified and experienced team comprising of the appraisal team lead and twenty four appraisal team members

- Two SAS entries filed for CMMI-DEV and CMMI-SVC separately, clearly showing parameters, findings and ratings

- Combined appraisal report with findings and ratings for SVC PAs, DEV PAs, and core PAs shown separately (tailoring done after obtaining SEI approval)

Success Factors for this MSA

- Detailed and thorough integrated planning ensuring that SEI requirements for the MSA were adhered to

- Selection of appraisal team members and extra training to ensure appropriate and effective handling of both constellation requirements

- Experience of the lead appraiser and the appraisal team members

- PMO support for the entire duration of the appraisal

- Separate sampling of projects in each constellation and adequate coverage of critical factors for the two constellations

- Took advantage of synergies between the two constellations – CMMI-DEV and CMMI-SVC; e.g. the Core PAs, architecture of constellations

- High quality technical infrastructure availability - use of videocons for coverage, so as to save time of ATM travel

- Multi site draft and final presentations using multiple stream interactive video conferencing

- Use of interpreters for overcoming language barriers

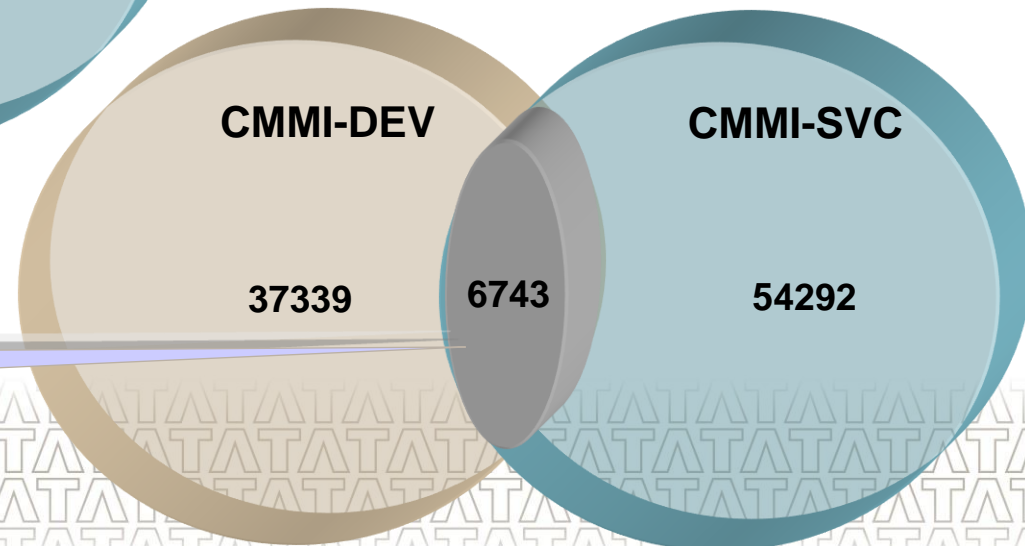- Robust, in-house developed, automated PA Workbook Tool

Scope of Appraisal - Size of the OU

- Organizational Unit (OU) included 4,983 projects and over 98,000 people across the 2 constellations

Projects

CMMI-DEV

2212

199

CMMI-SVC

2572

People

CMMI-DEV

37339

6743

CMMI-SVC

54292
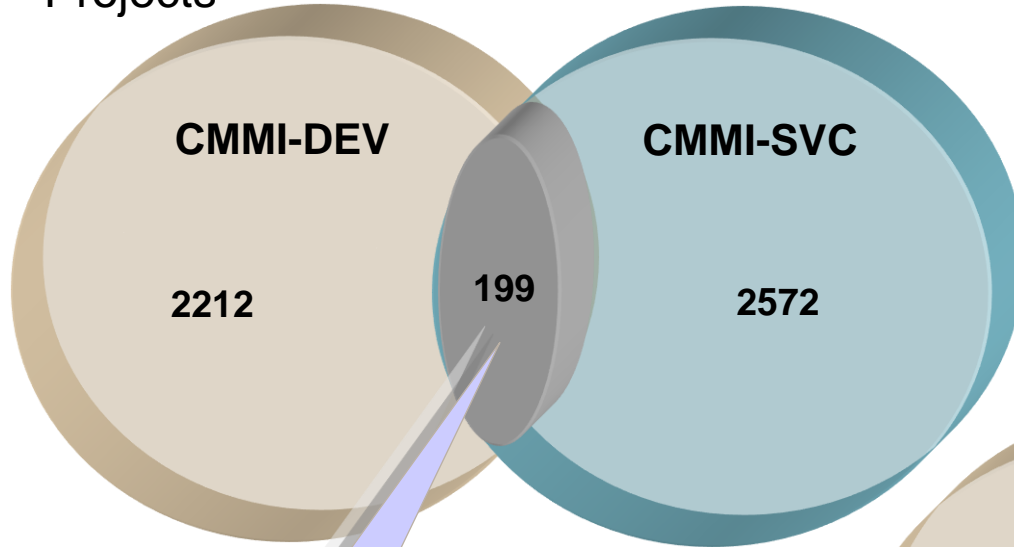
Projects for which both constellations are applicable

Scope of Appraisal - Demographics

CMMI-DEV

OU Scope

– 2,411 projects
– 47,475 people

Critical Factors

– Project Types   : 9
– Delivery Units   : 32
– Peak size types   : 3
– Methodologies   : 11

CMMI-SVC

OU Scope

– 2,771 projects
– 64,428 people

Critical Factors

– Service Types   : 5
– Delivery Units   : 33
– Peak size types   : 3
– Methodologies   : 9

Scope of Appraisal - Sampling

- Sampling done using 95% CL and 10% CI with strict random selection across the full set of OU projects was applied resulting in 96 projects selected

CMMI-DEV

Sample

- 5 Focus projects
- 39 Non-focus projects
- 3.41% associate population covered through focus & non-focus projects and support functions
- 58.3% associate population covered through account relationships represented by focus and non-focus projects and support functions

CMMI-SVC

Sample

- 7 Focus projects
- 45 Non-focus projects
- 3.26% associate population covered through focus & non-focus projects and support functions
- 29.7% associate population covered through account relationships represented by focus and non-focus projects and support functions

Scope of Appraisal – OU Coverage

CMMI-DEV

Critical Factor Coverage

- Project Types   - 100%
- Delivery Units   - 87.5%
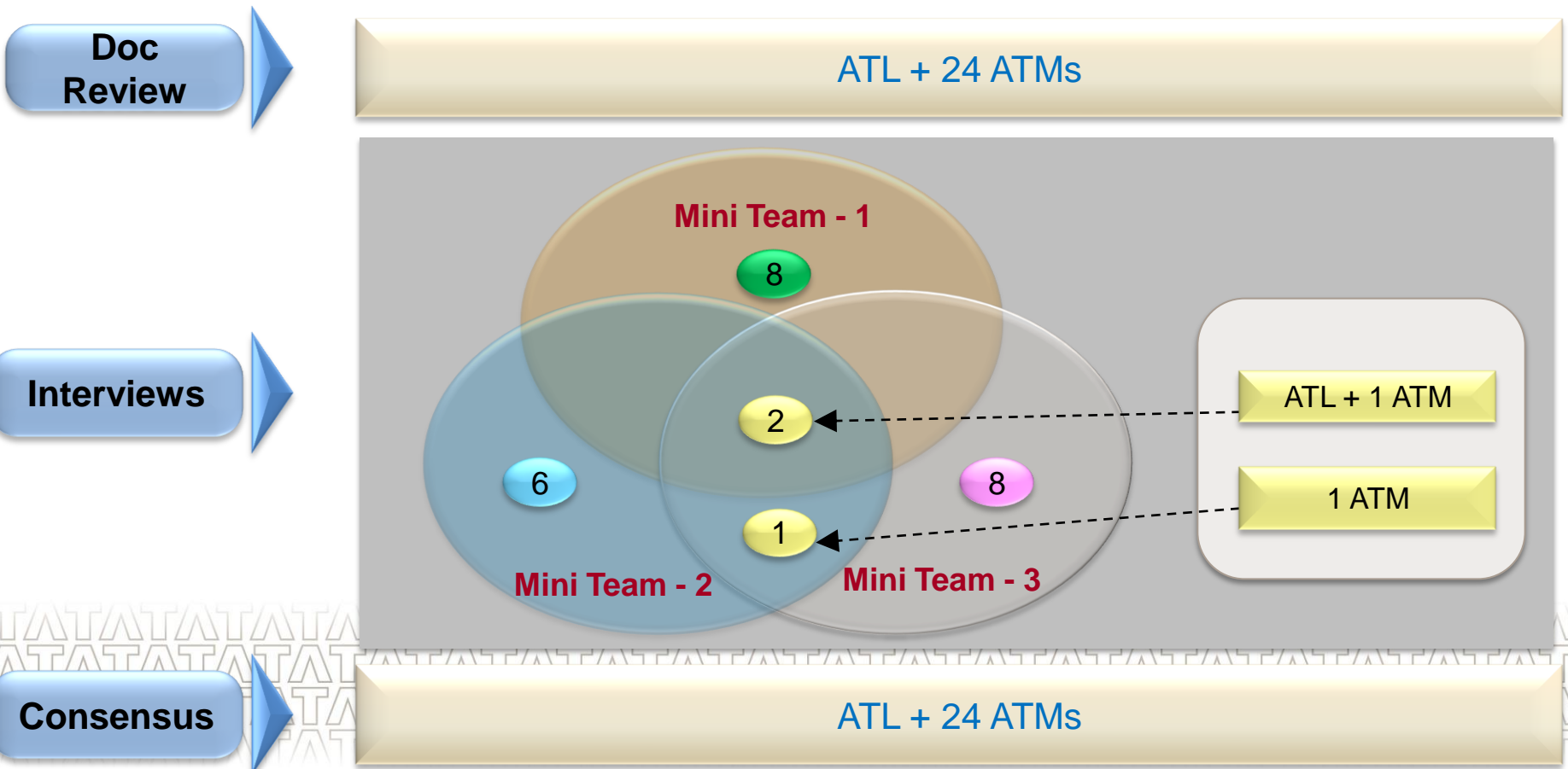- Peak size types - 100%
- Methodologies   - 100%

CMMI-SVC

Critical Factor Coverage

- Service Types   - 100%
- Delivery Units   - 97%
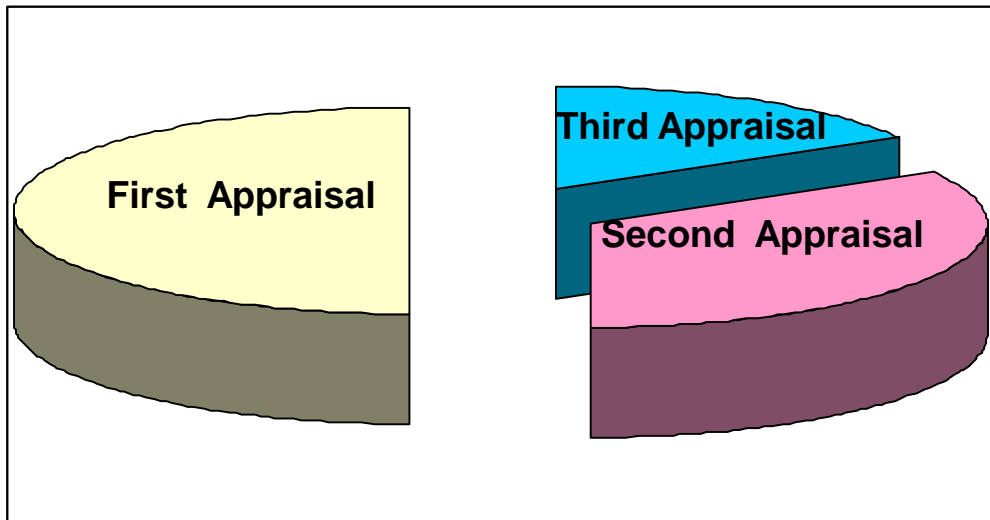- Peak size types - 100%
- Methodologies   - 100%

Planning Considerations – Team

- 1 Team Lead and 24 Team Members
- 3 mini teams to address all PAs across the two constellations
- Collective full team consensus

Doc Review

ATL + 24 ATMs

Interviews

Mini Team - 1

8

2

6

8

1

Mini Team - 2

Mini Team - 3

ATL + 1 ATM

1 ATM

Consensus

ATL + 24 ATMs

Planning Considerations – Team Experience

- Long experienced HMTL from outside TCS
- ATMs with previous SCAMPI^{SM} A experience

First Appraisal

Third Appraisal

Second Appraisal

ATL : DEV & SVC

19 ATMs : DEV & SVC PAs

2 ATMs : only DEV PAs

3 ATMs : only SVC PAs

- Avg. industry experience of ATMs -14 yrs
- Avg. management experience of ATMs – 11 yrs
- PAs distributed to ATMs, based on knowledge and experience
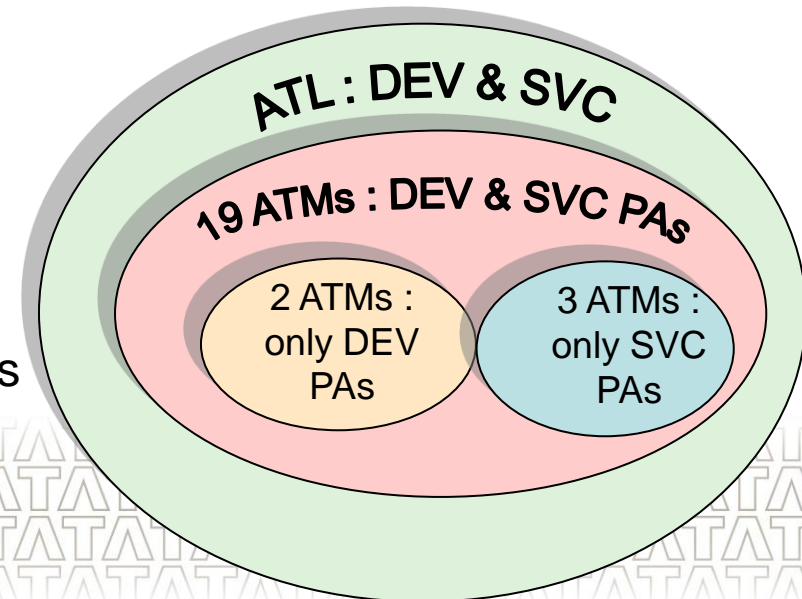
Planning Considerations – Schedule

ATM Training
8th – 10th April'10

PIID Preparation
28th July'10 – 20th Aug'10

Document Review
10th Sept'10 – 19th Sept'10

Interviews
13th Sept'10 - 16th Oct'10

Consensus & Report Preparation
16th Oct'10 – 8th Dec'10

Appraisal Statistics

Document Review	3360 person hours
Onsite	9020 person hours

CMMI-DEV

- Process Areas : 22
- Practices : 437
- Instantiations : 4829
- Documentary Evidences : 9587
- Affirmation Coverage : 95%

CMMI-SVC

- Process Areas : 24
- Practices : 470
- Instantiations : 7213
- Documentary Evidences : 14302
- Affirmation Coverage : 94%

Benefits from MSA

- Effort and cost savings on account of
  - Planning
  - Training
  - Tool development
- Reduction in overall cycle time as compared to conducting separate and serial appraisals
- Minimum impact of appraisal on the organization, as compared to separate appraisals
- Uniform verification across the organization for the two constellations
- Common interviews for groups supporting both the constellations
- Improved appraisal productivity
- A single event
- Pilot experience filed with SEI

TCS appraised at
Optimizing Level 5
for CMMI-DEV and CMMI-SVC

Challenges Faced and How They Were Overcome

- Required a large team to handle PAs of both constellations
  - Experienced LA long versed in both models
  - Optimal distribution of DEV and SVC PAs across ATMs
- Needed to handle large volume of data across 2 constellations
  - PAWB tool enhanced to handle huge data volumes
- Some entities required to be covered for both DEV and SVC; e.g., support groups like Process Excellence, Training, Infrastructure Support
  - Common interview sessions for such entities
- Initially required to prepare and present 2 reports for DEV and SVC
  - Joint report prepared with tags to differentiate findings for each constellation
- Organization had a huge size and geographic spread
  - PMO and location contacts set up for the entire duration
  - Videocons used for remote locations
- Required availability of a strong infrastructure – videocons
  - Infrastructure for multiple site videocons and backup facility
  - Extensive videocon testing with 31 sites
- Needed to address language barriers in some GDCs
  - Interpreters used as appropriate

Considerations To Be Explored

- MSA worked in TCS, a large organization. Will it work in small organizations?
  - We believe "YES" but the key to success is a well defined and managed plan with much more deliberation than in a one constellation appraisal
- What impact must be addressed when including three constellations?
  - Or four, as PCMM is permitted with SCAMPI v1.3.
- What additional requirements should SEI have of ATLs who lead an MSA?
- What additional common risks should be considered?
- Using MSA when maturity levels differ across constellations
- Using SCAMPI v1.3 with MSA

Further Considerations for SEI

Possibility of:

- Combined interview sessions for projects, for the common PAs
- Single Appraisal Plan for multiple constellations
- Single SAS entry as an MSA
- Common practice characterization across all constellations
- Combining validation sessions
- Going beyond the 90 day Phase 2 duration, as it is more than 1 appraisal
- Refined statement on what should be in a common Final Report, for consistency across ATLs
  - Format
  - Tagging of differences in constellation findings
  - Additional content due to a MSA versus single constellation reports

Acknowledgements

- SEI for permitting a pilot MSA

- TCS Management

- TCS Appraisal PMO and site coordinators across TCS locations enterprise-wide

- Assessment team

- All the TCS participants who were part of this MSA

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Thank You

Questions?

Example Tagging in Measurement and Analysis PA

Strengths:

- – TCS has identified Certainty Metrics in line with its Experience Certainty objective from its repository of metrics such as On Time Delivery, Defect Free Delivery, SLA Compliance, Bad Fix, Customer Budget Variance **[DEV & SVC]**

- – Additional metrics beyond Metrics Program which are aligned to either customers' or units' strategic objectives as per Balance Score Card (BSC) are identified, measured and tracked at IOU and project level such as:
  - • Velocity and Burn-down charts for Agile methodology based projects **[DEV]**

- – Significant investment made in digitizing processes, automating data capturing, analyzing and generating dashboards, thereby increasing the data integrity and slice and dice capabilities. E.g.
  - • C Matrix integrated with Business Object with maker-checker concept, SLA tracker in couple of IOUs **[SVC]**

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