The Business Benefits of CMMI at NCR Self Service

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Agenda

- Context: NCR Self Service, Scotland
- Process Improvement Journey
- Benefits gained in Software Process Improvement
- Challenges in changing culture
- Benefits gained using CMMI
- Reasons for success
- Issues faced
- Questions and Answers

NCR

NCR ~ 30,000 Employees World Wide

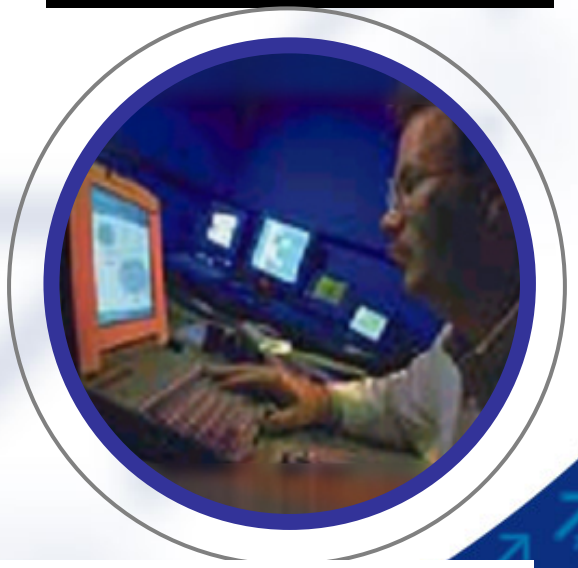
Financial

Self-Service

Retail

Store Automation

Teradata



Data Warehousing

RESULTS

Self Service: Global Presence and Customer Focus

More than 500,000 Installed NCR ATMs

32% share of Installed base

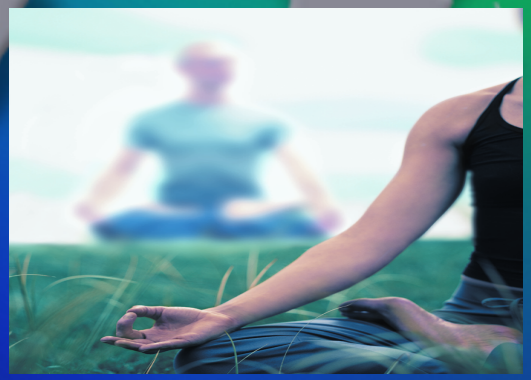
Shipments to 130 countries

Manufacturing Scotland-Canada-China India-Brazil

Global professional services

Global customer services

Hardware



Software

NCR Services

Self Service in Scotland

Main Campus - Dundee

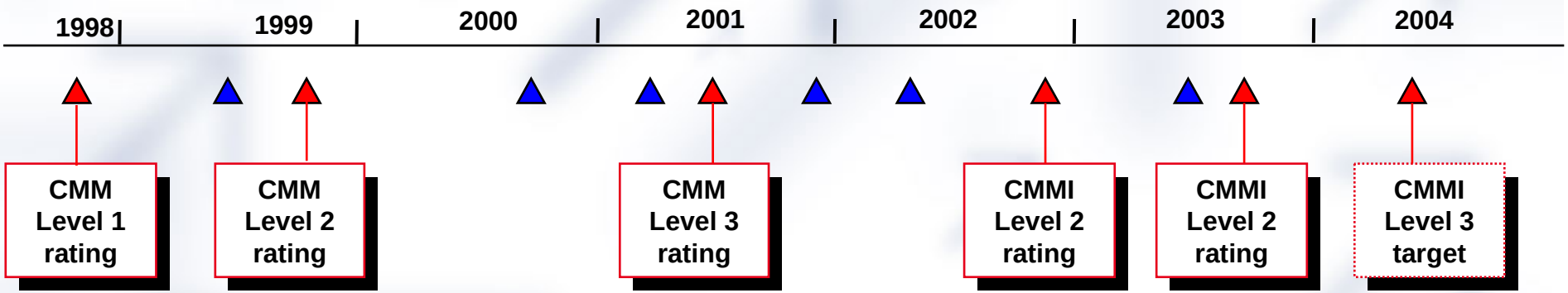
~ 1300 Employees

~ 500 in R&D

40 Project Managers

~ 90 active projects (Duration 2 months to 18 months)

Self Service Process Improvement Journey



Software Process Improvement using S/W CMM

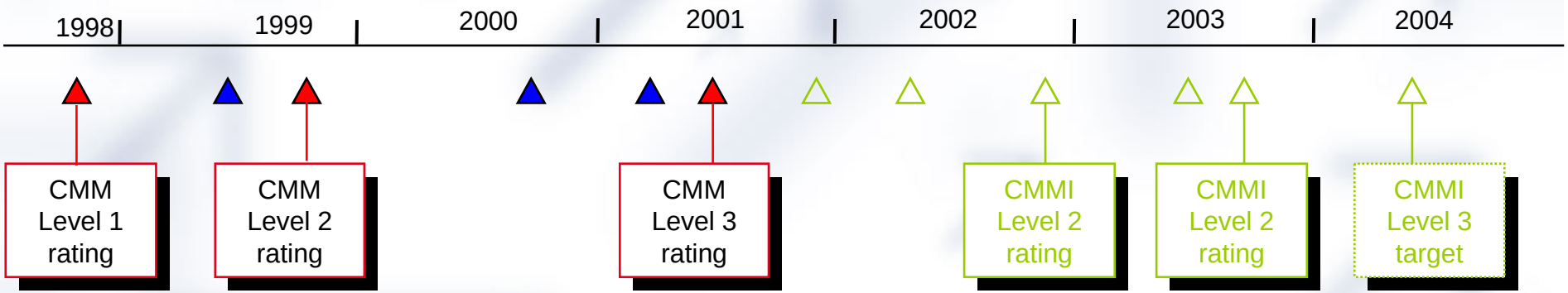
(Scope Software Development)

Process Improvement using CMMI

(Scope All Development and Product Management)

▲ Mini Assessment

Self Service Process Improvement Journey



Software Process Improvement using Software CMM

(Scope Software Development)

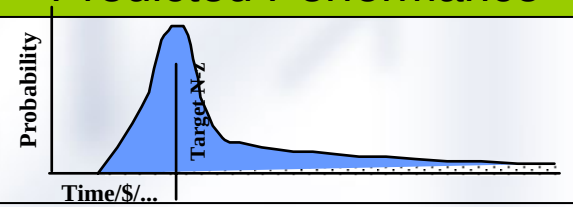
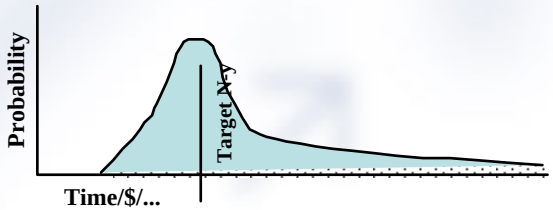
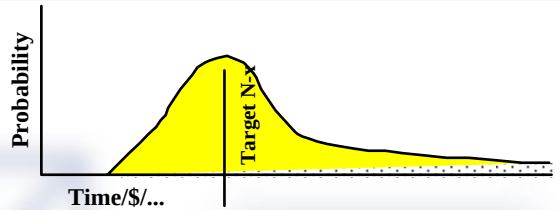
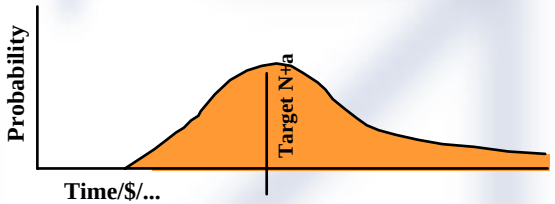
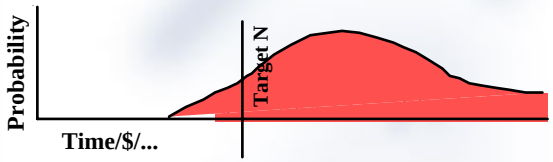
▲ Mini Assessment

Process Improvement using CMMI

(Scope All Development and Product Management)

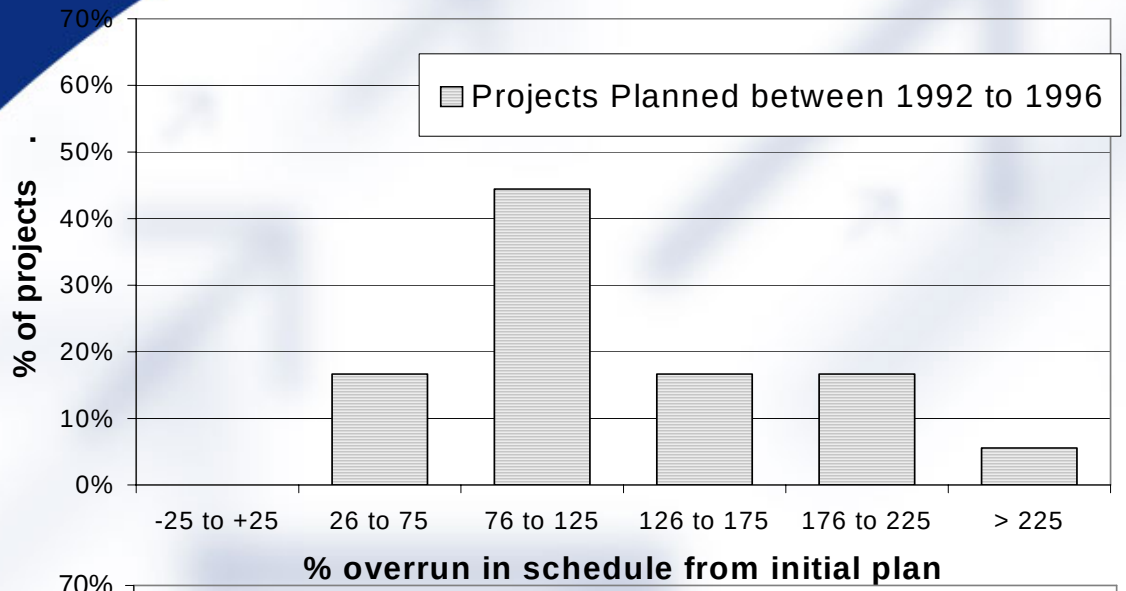
Benefits Gained by Software Process Improvement

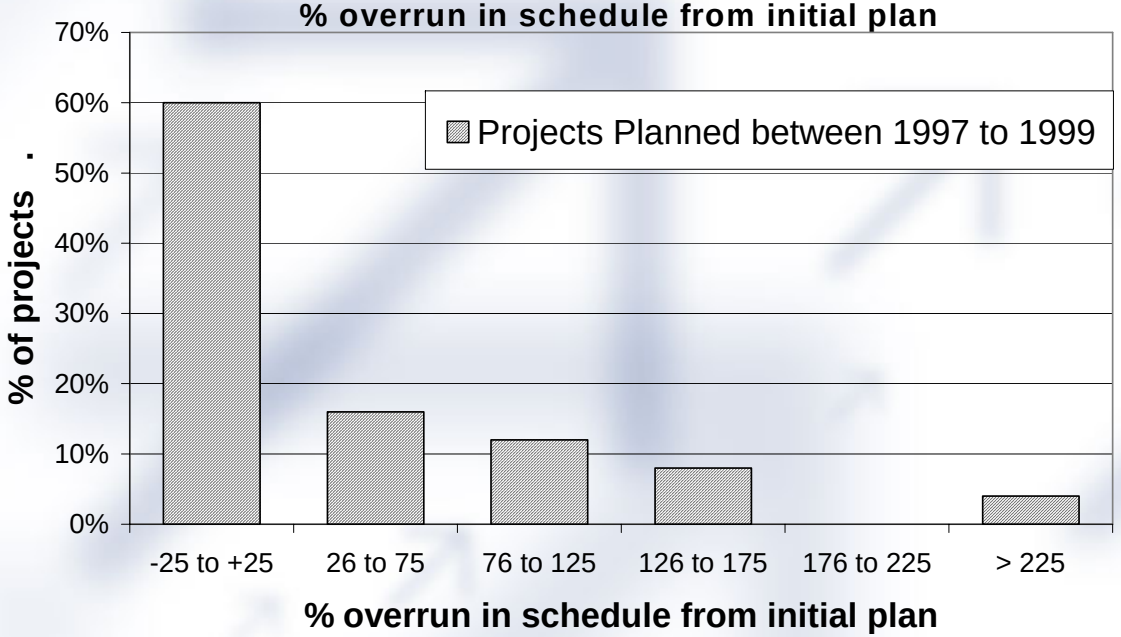
CMMI and Predictability

Level	Characteristic	Predicted Performance	Result
5 Optimizing	Continuous process improvement		Productivity & Quality
4 Quantitatively Managed	Process measured and controlled		
3 Defined	Process characterized for the organization and is proactive		
2 Managed	Process characterized for projects and is often reactive		
1 Initial	Process unpredictable, poorly controlled, reactive		

RISK

Software Schedule Variance Level 1 to 2

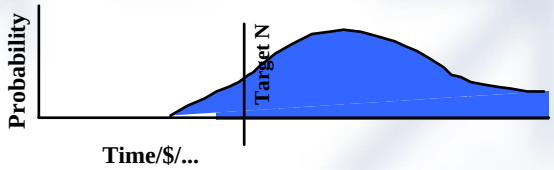




CMM Level 1

0% of projects were within +/- 25%

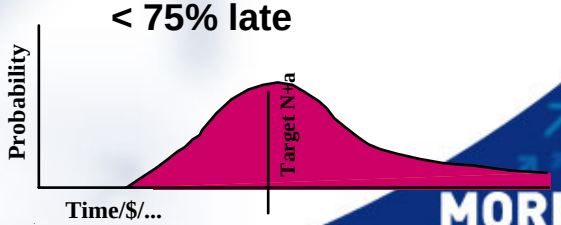
85% of projects were > 75% late



CMM Level 2

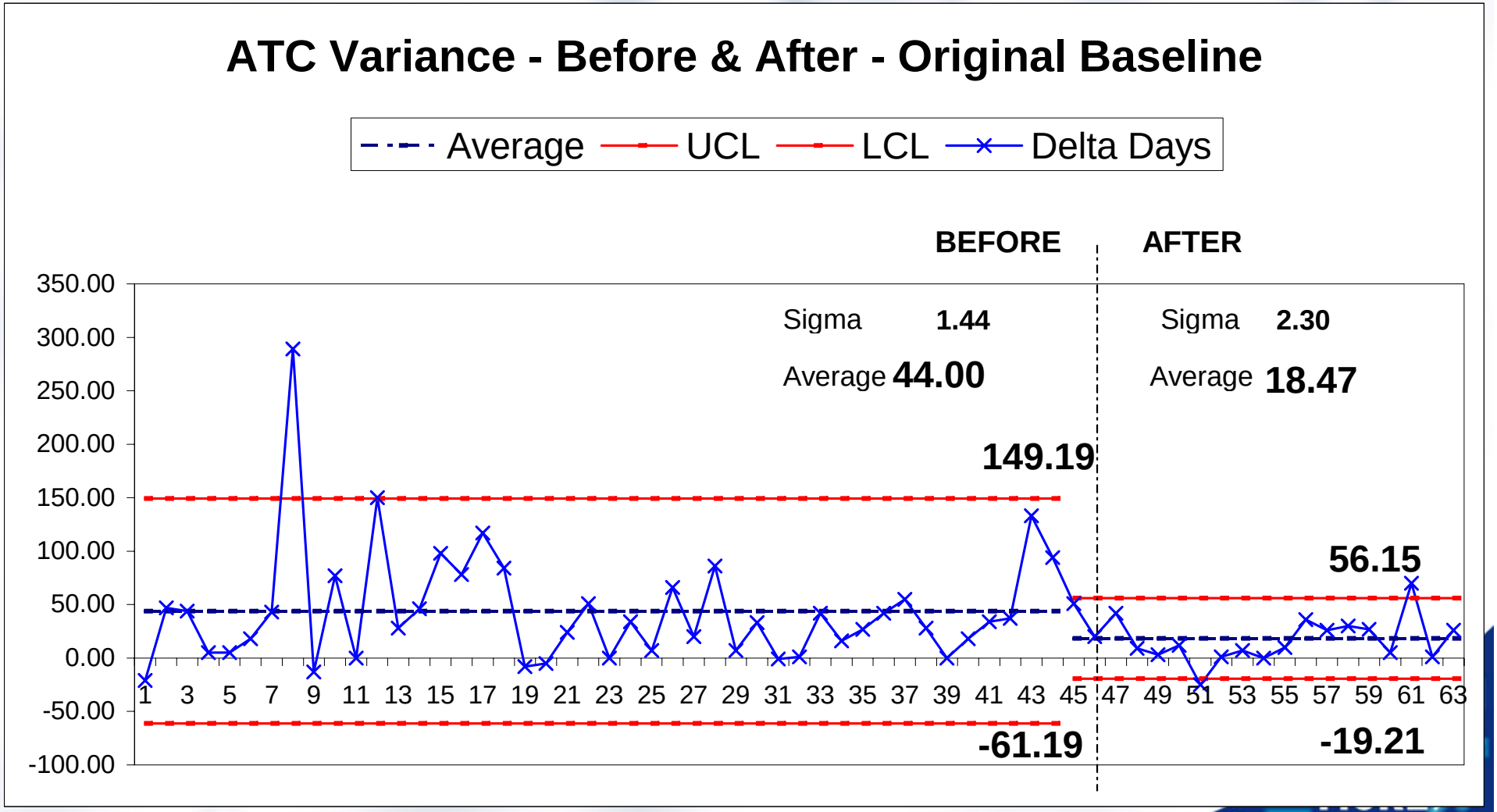
60% of projects were within +/- 25%

75% of projects were < 75% late

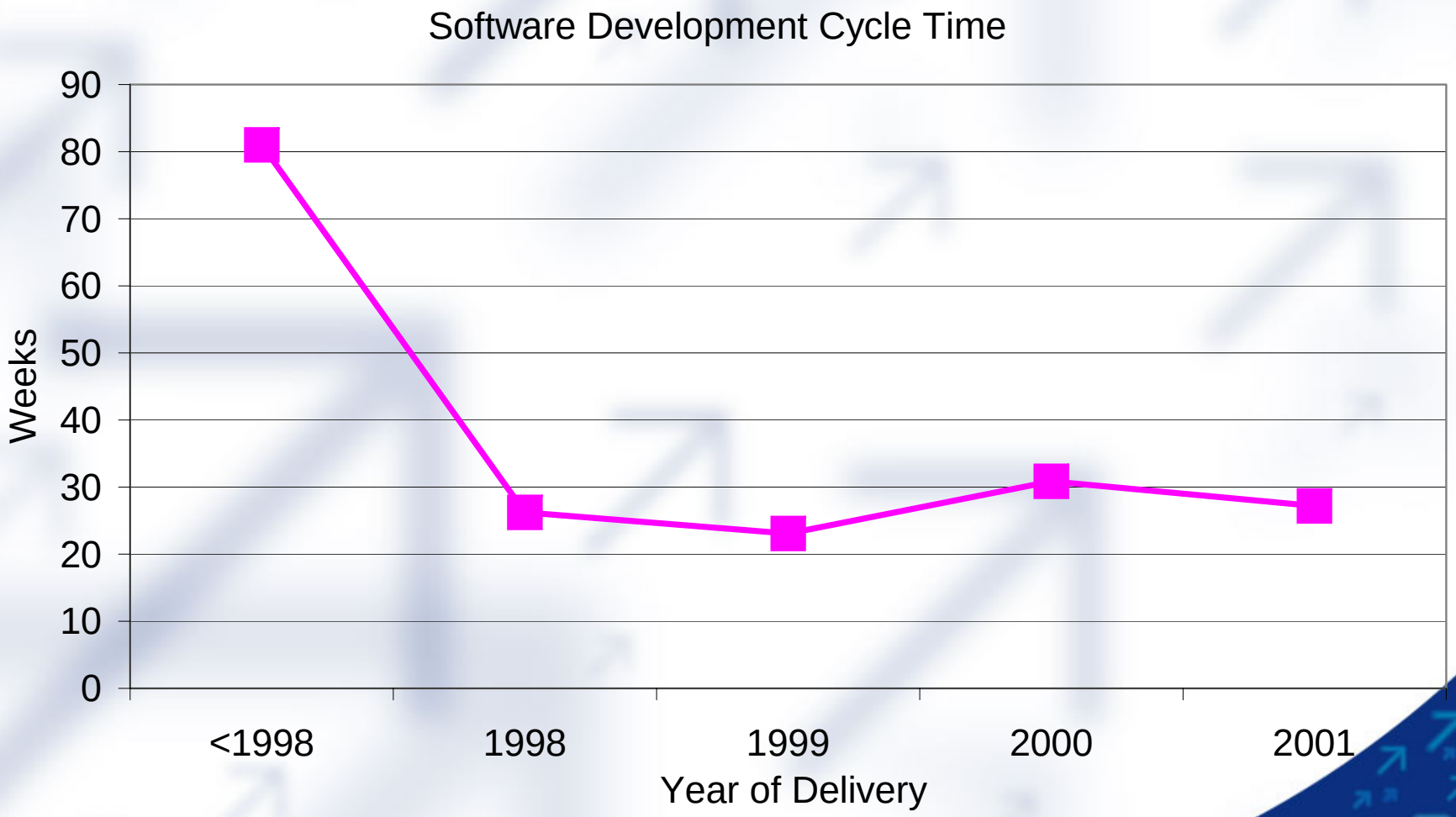


MORE RESULTS

Software Schedule Variance
CMM Level 2 to 3



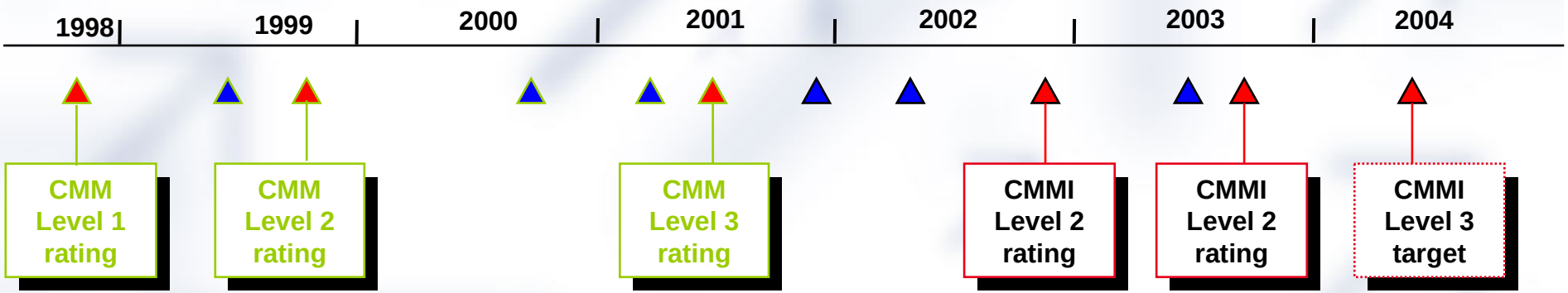
Software Development Cycle Time



Other Benefits

- Greater visibility of project status to senior management
- Expectation that schedule will be met
- Managed process now the foundation for continuous process improvement based on measurement
- Improved employee satisfaction
- Engineering projects are now measured against realistic targets
- Improved understanding of risks associated with projects

Software CMM to CMMI



Software Process Improvement using S/W CMM

(Scope Software Development)

Process Improvement using CMMI

(Scope All Development and Product Management)

▲ Mini Assessment

Changing culture

‘As was’ situation 2001 in Engineering

- **Reactive**
- **Process Averse**
- **Wide ranges of practices**
- **Limited lessons learned**
- **Ad hoc decision making**

- **‘Finger in the air’ estimation**
- **Process owners in name only**
- **Only a few involved in Process Improvement**
- **Unpredictable processes**

Target culture

- **Proactive**
- **Process Discipline**
- **Consistent practices**
- **Lessons Learned every time**
- **Structured and fact based decision making**
- **Data driven estimation**
- **Active Process Management**
- **Majority involved in Process Improvement**
- **Predictable processes**

Challenges of changing culture -1

- **Starting point - 'As was' situation 2001**
  - ⊗ Compressed time frame "reach Level 3 in 2 years"
  - ⊗ Lack of Project Management discipline in Hardware Development
    - large overruns
    - poor visibility of portfolio status
    - inconstant process usage
    - Issue Management style - reactive
    - Risk Management almost non existent
  - ⊗ Short term ROI required for a medium to long term type investment

However we were able to build on….

- √ S/W team achieved Software CMM Level 3 in June 2001
- √ Most Project Managers had gained Masters Certificate in Project Management
- √ Strong Engineering Discipline
- √ Project Management Office started 2001
- √ 6 Sigma program underway in NCR

Challenges of changing culture -2

- **Convincing the management team to invest the effort**
  - √ The business case for change was built on previous success in using Software CMM locally and in other parts of NCR
- **Getting peoples time to work on improvement when they are too busy fire fighting**
  - √ Actively involved Senior Management
  - √ Project Management Office dual role of helping projects out of crisis and organisational improvement
  - √ Trained Project Managers in CMMI and sought their involvement in planning and action teams
  - √ Teams lead by experienced " change agents" involving the practitioners at required stages.
    - to understand the issues
    - come up with solutions
    - validate solution / working practices & pilot new practices

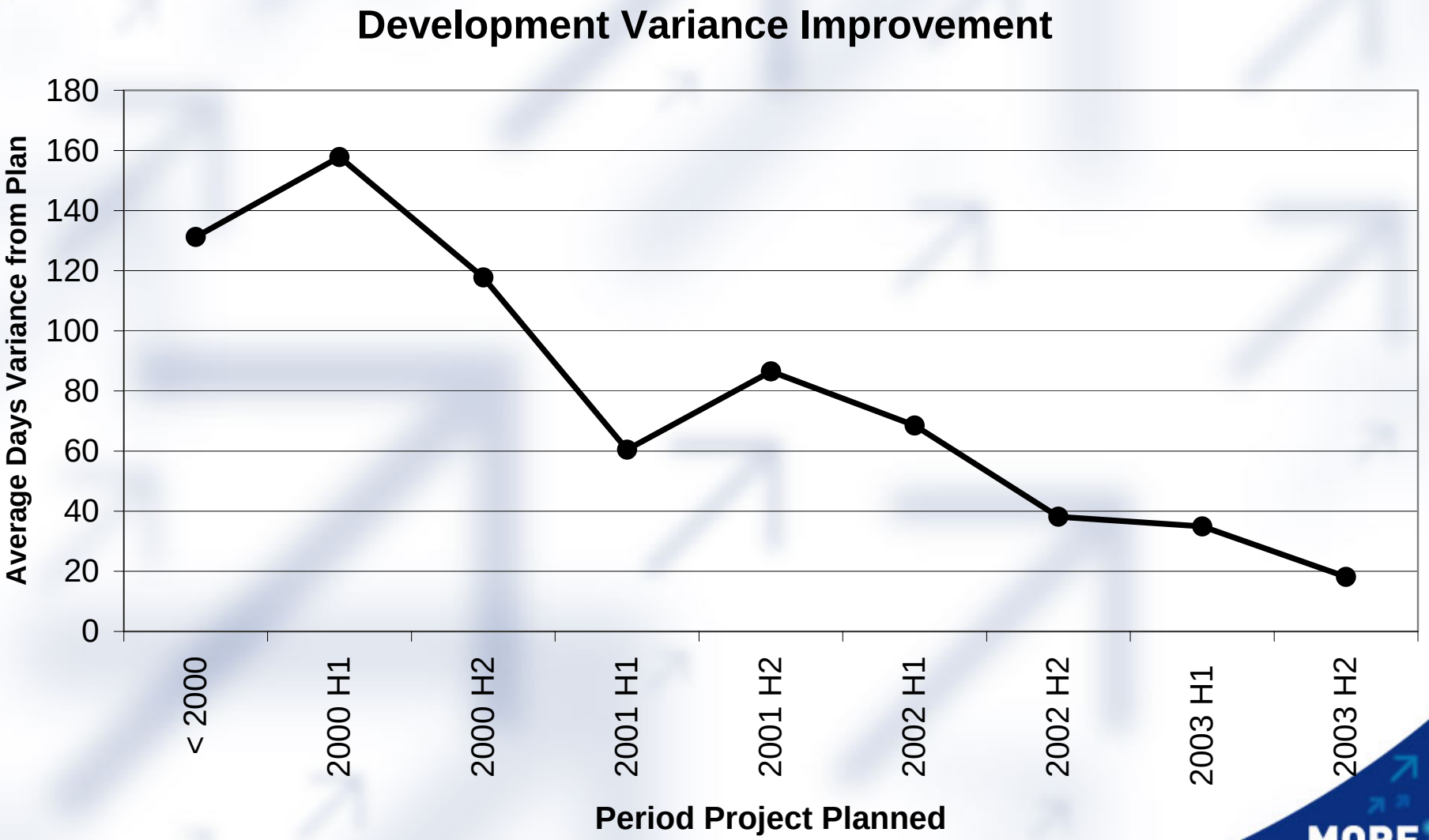
Challenges of changing culture - 3

- **Getting people to execute a process for the first time**
  - √ Training, facilitation and support
  - √ Using ‘evangelists’ to promote good practice
  - √ Templates and guidance
  - √ Communication and reminders
  - √ Planned Assessments helped to provide additional motivation
  - √ Project Management Certification Programme
- **Achieving Institutionalisation**
  - √ Process Measures and Management Review with senior management
  - √ Setting targets and reporting against them regularly
  - √ Process Audits and assessments

Challenges of changing culture - 4

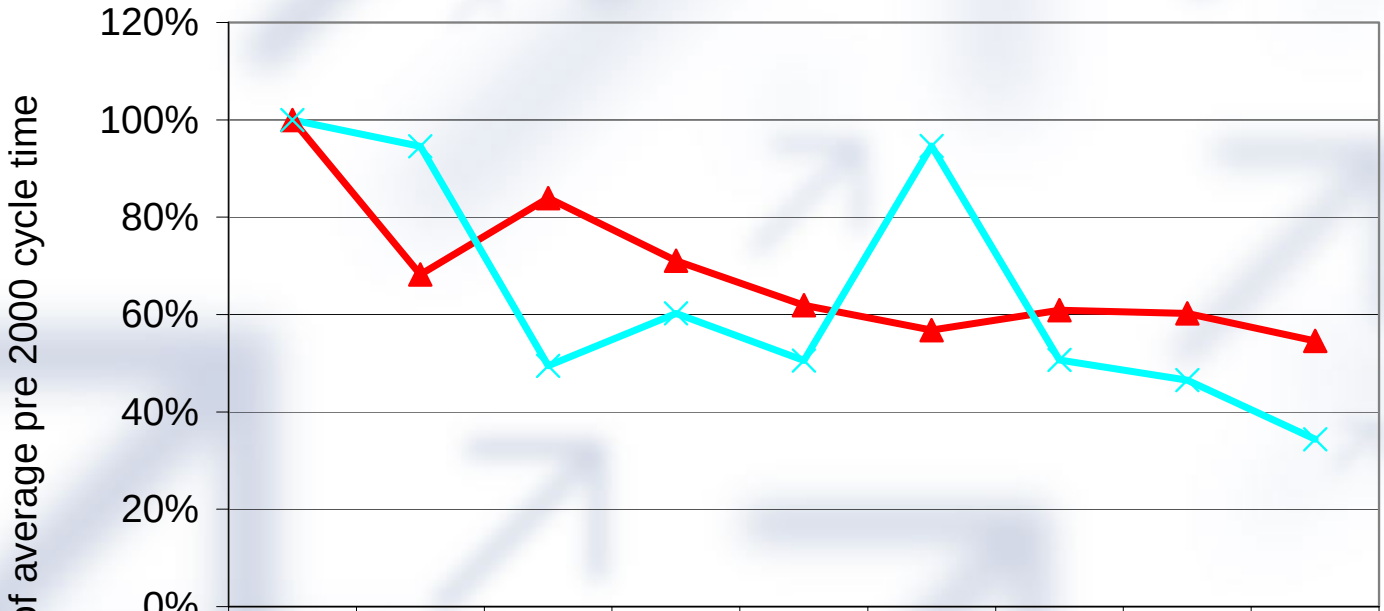
- **Keeping the momentum going**
  - √ Communication - emails, cascaded presentations, community events, easy to access Process, templates and guidelines through web
  - √ Regular Lessons Learned forums
  - √ Rewards for good process improvement suggestions
  - √ Appraisals, focus the attention

Some Results to date



Project Cycle Time Improvement

Development Project Cycle Time Reduction



	< 2000	2000 H1	2000 H2	2001 H1	2001 H2	2002 H1	2002 H2	2003 H1	2003 H2
Module Integration Projects	100%	68%	84%	71%	62%	57%	61%	60%	55%
Module/Device Projects	100%	95%	49%	60%	51%	95%	51%	47%	34%

Period Project Planned

Other Benefits

- √ **Broader scope of SEI CMMI vs. Software CMM**
  - → From Requirements elicitation to final validation
- √ **Common language, templates and practices across disciplines**
- √ **Sufficient consistency process in process execution to enable measurement and process improvement**
- √ **Improved rigour in Project Management**
- √ **Project Managers now thinking about ways to improve their processes**
- √ **Better understanding of impact of changes**
- √ **Improved usage of lessons learned**
- √ **Formal project governance structure with more consistent management control and insight into status**

Reasons for success - 1

- **Senior management buy in and active involvement**
- **Project Managers saw CMMI practices helping them**
- **Measurements closely tied to business objectives with regular feedback on progress**
  - Schedule variance and project cycle time
  - Some schedule variance and cycle time gains in the first year - helped to keep management attention
  - Not just about getting the level rating
- **Running the improvement effort as a year-to-year project**
  - Planned, tracked and leading by example
  - Regular Improvement Team meeting
- **Process user involvement in defining changes and pilots**
- **Focus on use of a few templates with built in guidance**

Reasons for success - 2

- **Dedicated resources on the improvement**
- **Project Management Office direct involvement**
  - Parallel focus on Project Management Competency development
  - 1 to 1 Project Consultancy
  - Active Process Management
- **Prior work carried out by Software Improvement Team**
- **Prior Project Management Training**
- **CMMI Training for Project Managers and Quality Assurance**
- **Regular short process training sessions,~ 27 hours per person**
- **Regular Communication of what's happening (newsletter, emails, management communication sessions, web site, project manager community events etc)**
- **Appraisals focused the attention for implementing improvements**
  - Had internal qualified CMMI Appraiser

Issues (1)

- **Coping with the level of change required in a short space of time**
  - – Time to keep up with the changes and Business Pressures
  - √ Careful planning and co-ordination of improvement efforts required
- **Benefits take time to become visible to management**
  - – With a project cycle time of 6 - 9 months new practices typically only get adopted as new projects start
  - √ Need to introduce change midstream into projects to speed up change
- **Senior Management behavior**
  - – Ignoring process sometimes seen as a badge of honor
  - √ Need to use tailoring as a controlled way of adapting process

Issues (2)

- **Lip service sometimes paid to the process**
  - Typically due to a lack of understanding of the importance or usefulness of the practice
  - √ Learning from peers is often useful here (e.g Lessons Learned forum)
- **Over complex measurement systems**
  - too many or too complex measures can be counter productive
  - √ Focus on ones a that address the key business objectives
- **Tools are often used as an excuse**
  - "Tools are non existent, slow or don't automate everything for me"
  - New Tools seldom provide the silver bullet
  - √ Need to integrate tools with the process

Conclusion

- **Achieving CMM/CMMI Level 2 and 3 has led to improved business performance within NCR Self Service**
- **CMMI Level 3 provides the foundation for Continuous Process Improvement based on measurement within NCR Self Service**
  - Repeatable set of processes in place
- **Success requires 3 key elements**
  - √ **Building and selling the business case for change (ROI)**
  - √ **Senior Management regular and direct involvement**
  - √ **Some dedicated resource**

For more information

- CMMI - Free download of the model, papers and reports

  www.sei.cmu.edu/cmmi/

- NCR

  www.ncr.com