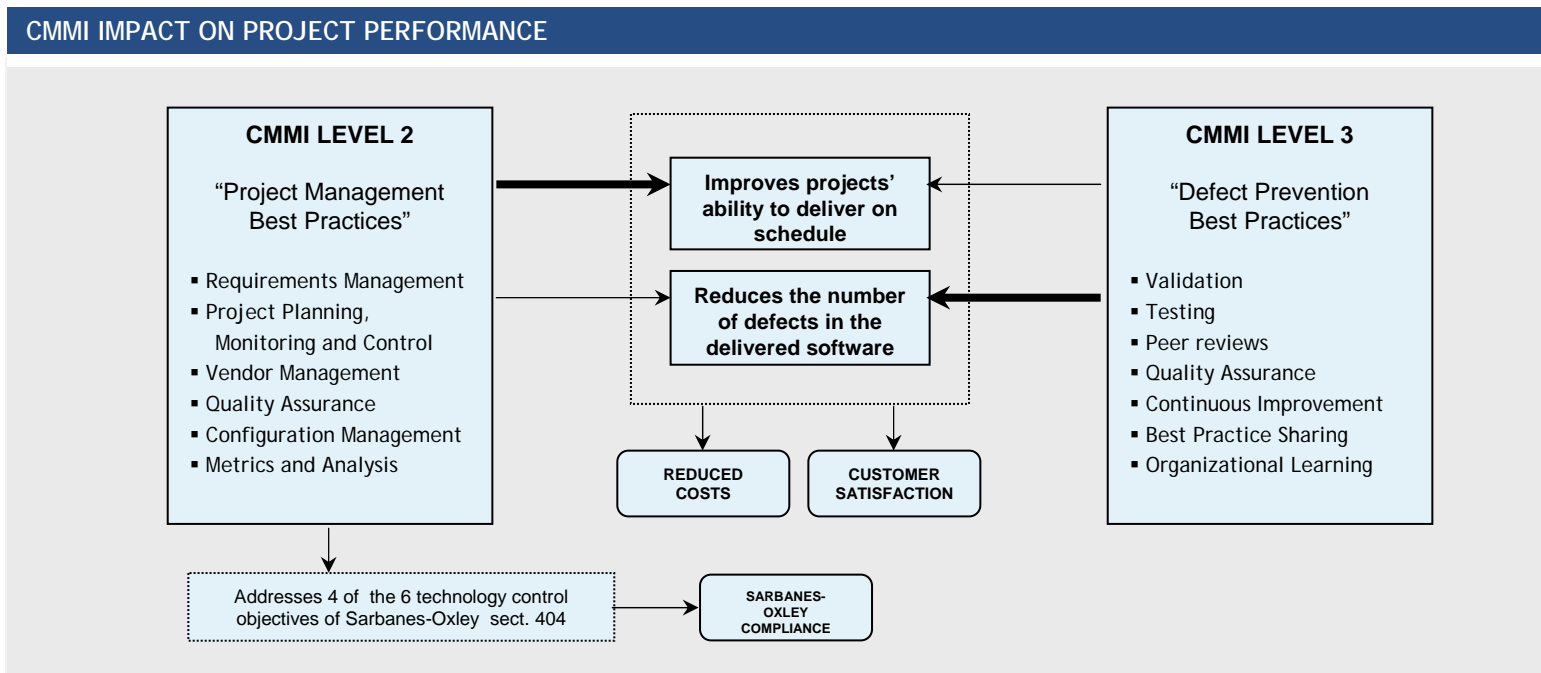


IB TECHNOLOGY EXAMPLES OF CMMI BENEFITS

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JPMorgan Investment Bank Technology

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Overview

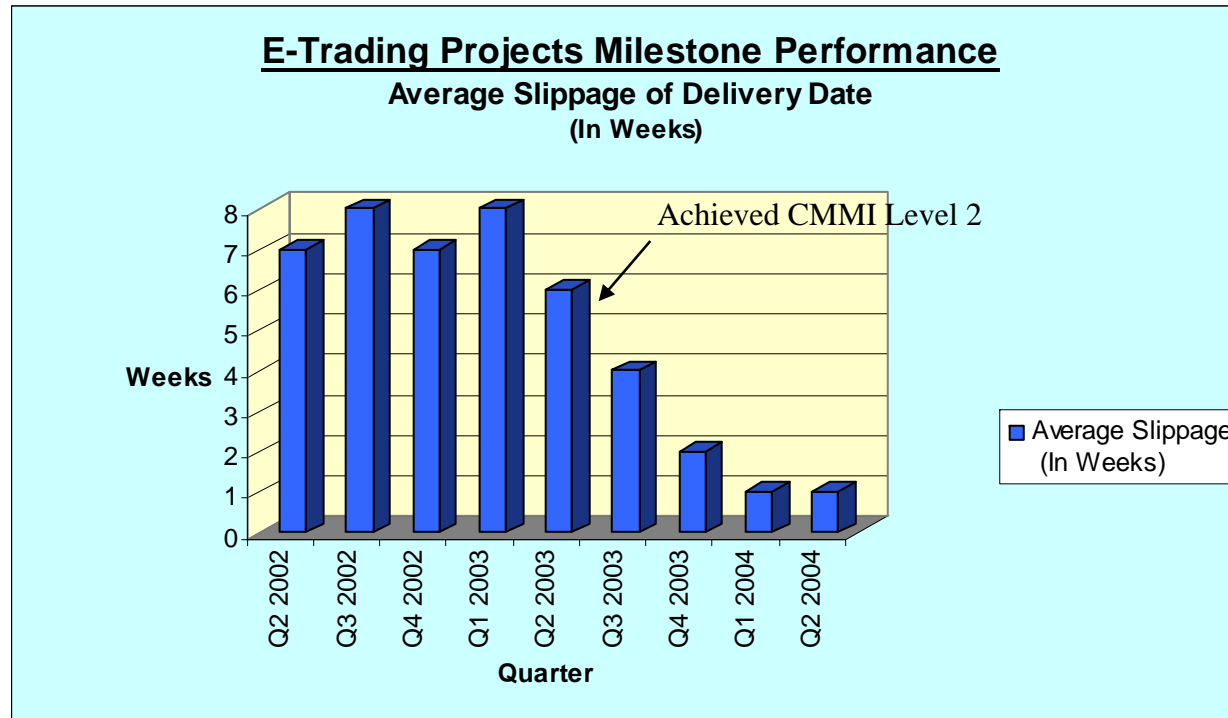


IB TECHNOLOGY: 53 out of 59 groups (c.1658 technologists) at CMMI Level 2 and two groups (of c.130 staff) at Level 3.

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| <ul style="list-style-type: none"> • JUPITER – SWAPS BACK PROGRAMME, FMPS • NA INTEREST RATE TECHNOLOGY - SETE • FORT - CONCORDE & OPEN SERVICES • MARKET RISK TECHNOLOGY • FORT – IRD TECH • FAMIS • DOCUMENTUM • IB PORTAL • SALES MIS (3 APPS) • FLOWBIZ • JETS • B2B • ASIA REGIONAL RATES | <ul style="list-style-type: none"> • CM NA - LOAN ORIGATION/SYNDICATION • ISIS • CORE • GEM-EDT • MARKETS CREDIT RISK • C-CLEAR • TCP & DAC PROGRAM • SYDNEY EQUITIES AD • EQUITIES RESEARCH ASIA PACIFIC AD • HONG KONG EQUITIES AD • TOKYO EQUITIES AD • ASIA TREASURY AND C&R HONG KONG • ASIA IBC M&A | <ul style="list-style-type: none"> • TOKYO - TRADING TECHNOLOGY AND TRANSACTION PROCESSING • NAPOLI (GLOBALLY) • CLIENT CONNECTIVITY - NORTH AMERICA • DELAWARE EQUITIES • CSW - NORTH AMERICA • AUTO TRADING (+ OTHERS OF EDG) • ECDM + NECTAR • RESEARCH - NORTH AMERICA • PTP, PYRAMID SERVICES • SCALA • RELEASE MANAGEMENT • ASIA REGIONAL CREDIT & JPMSA RATES | <ul style="list-style-type: none"> • CONFIRMATIONS • REFERENCE DATA • MOSS • SBL • CLIENT SERVER • SCI • CSW BUILD • EXCHANGE CONNECTIVITY • AUTO TRADING • RISK APPLICATIONS • REFERENCE DATA • CONVERTS • ALADDIN • SATURN/CLIENT VALUATION • EMEA RESEARCH • ASIA F&O AD SYDNEY |
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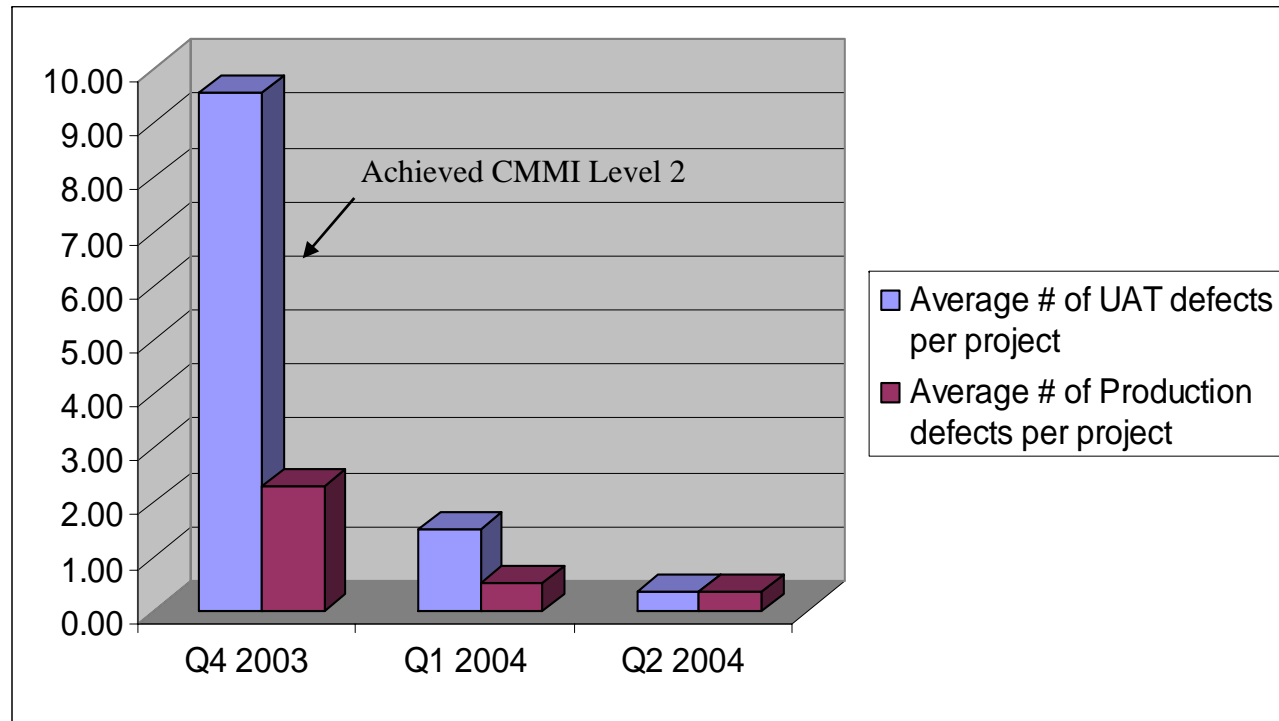
Reducing Project Slippage: average slippage of delivery date by 70-80%

Before using CMMI the E-Trading team were delivering with an average slippage of 6-8 weeks. When they achieved CMMI Level 2 the average slippage reduced to one week.



Defect Reduction: defects reduced by more than 80%

Asia Treasury and Credit Rates achieved CMMI level 2 at the end of 2003. In the subsequent 6 months* their average number of UAT & production defects dropped by more than 80% (18 projects)



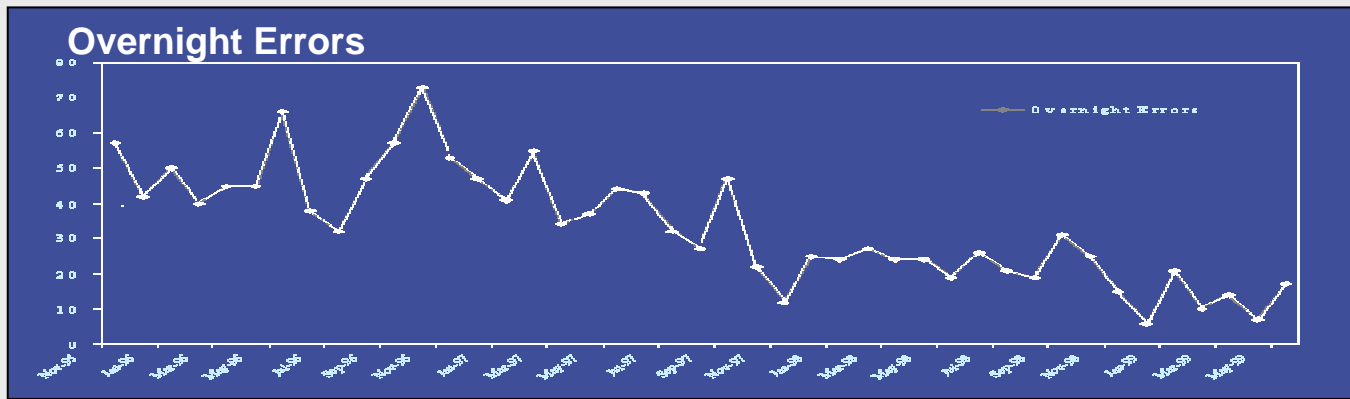
Cost Savings & ROI: \$1m per year cost savings and an ROI of 5:1

For MOSS, achieving CMM Level 2 resulted in fewer defects introduced in development - as a consequence, production support effort dropped 14.1%

Taking into account the expense of process improvement (3%) and quality assurance (2.6%), the net effort improvement was 8.5%.

This translated into savings of \$1,005,618 per year for a 100 person team.

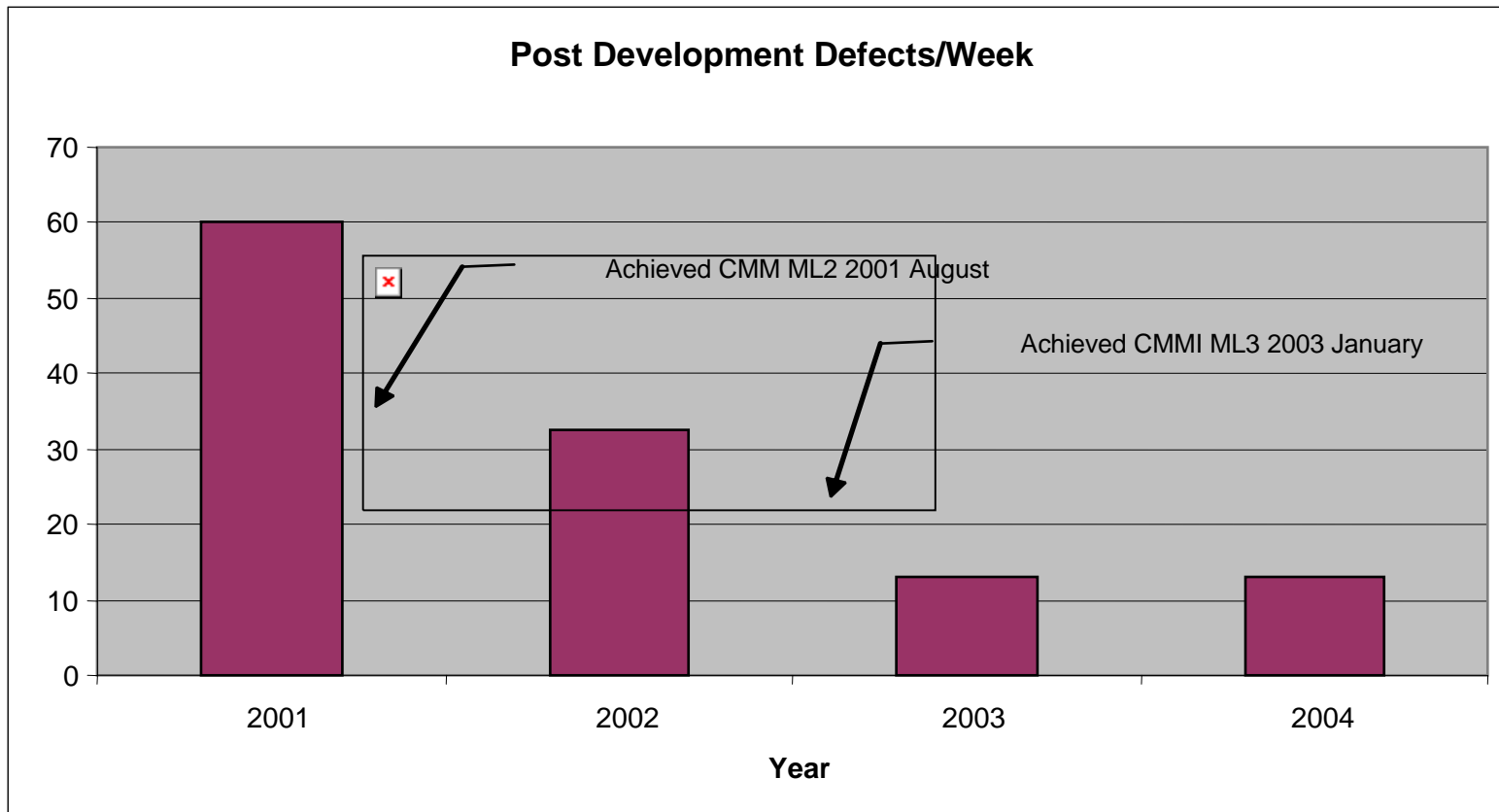
An ROI of 5:1.



Example from a back-office settlement and accounting system

CMMI Level 3 - Further defect reduction of 50%

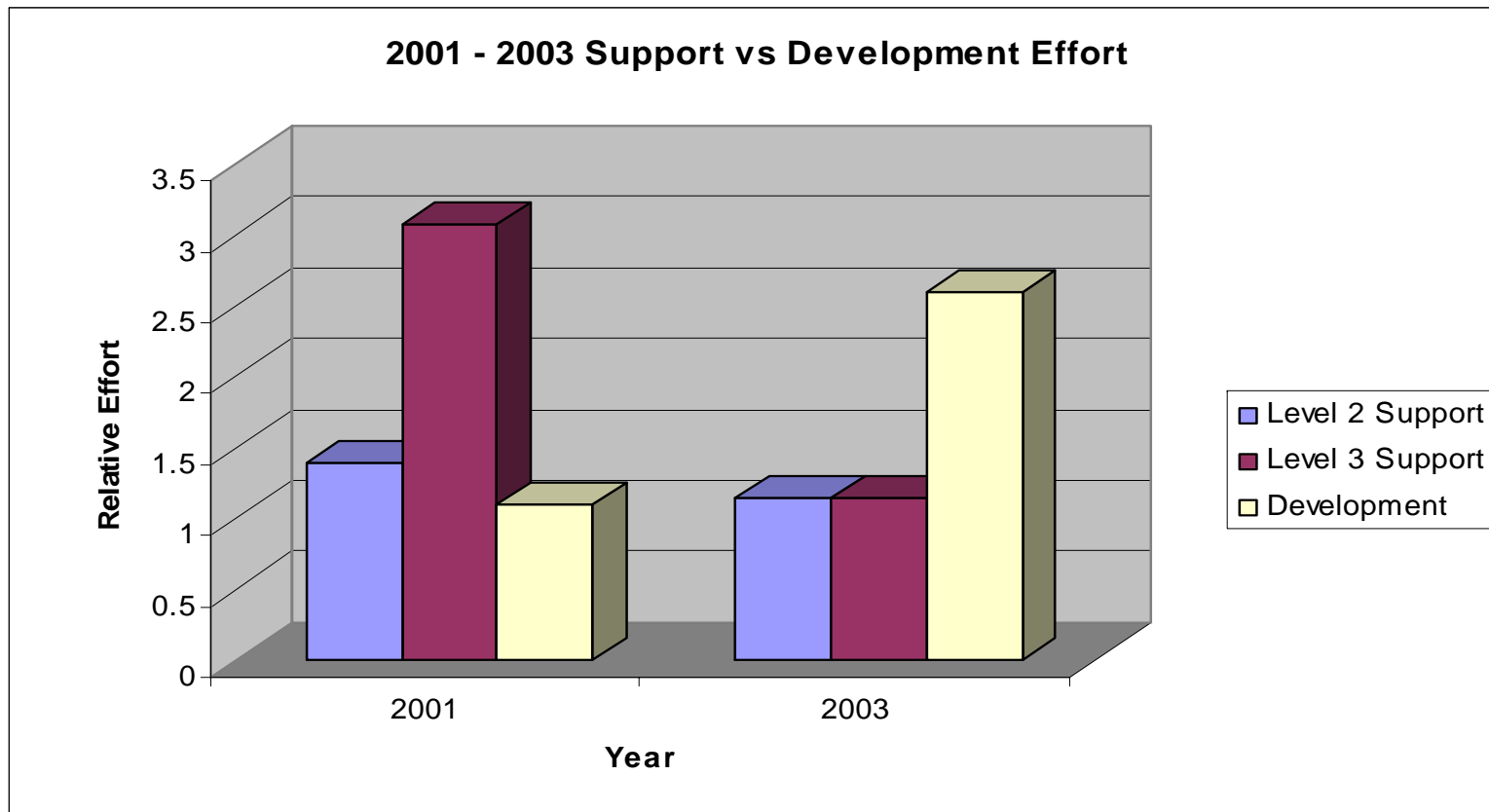
CMMI Level 2 reduced Concorde's post release defects by more than 40%.
 On achieving Level 3 a further reduction of more than 50% was achieved.



CMMI Level 3 - Increased productivity

The effort normally expended in fixing problems was instead translated into new business functionality with fewer defects per unit of output.

Three releases per year in 2001 increased to 6 releases in 2003.



Compliance with Sarbanes-Oxley

CMMI Level 2 processes and deliverables to satisfy four out of the six IT control objectives required by Sarbanes-Oxley.

CONTROL CATEGORY	CMM LEVEL 2 TEAMS' PROCESSES & DELIVERABLES
CHANGE CONTROL PROCESS:	Each application team will be using either a CTO group-wide lifecycle methodology or application team-specific methodology (sometimes called a "Code of Practice"). These will describe the change control procedures. Quality assurance audits/reviews will be done regularly on the teams to check that they are following the procedures. CMM mini-assessments will be conducted every 6-8 months - these will also check that the procedures exist and there is evidence of them being followed.
EMERGENCY CHANGES:	Each application team will be using either a CTO group-wide lifecycle methodology or application team-specific methodology (sometimes called a "Code of Practice"). These will describe the emergency change control procedures. Evidence to use to illustrate compliance - 1) Lifecycle methodology document (CTO-groups standard or application team code of practice; 2) CAN (Change Activity Notice) procedures, Release Management procedures, actual CAN records.
PROJECT LIFE CYCLE:	Each application team will be using either a CTO group-wide lifecycle methodology or application team-specific methodology (sometimes called a "Code of Practice"). Quality assurance audits/reviews will be done regularly on the teams to check that they are following the lifecycle. CMM mini-assessments will be conducted every 6-8 months - these will also check that the procedures exist and there is evidence of them being followed.
TESTING:	The application team's lifecycle methodology will describe or reference their testing procedures. evidence to use to illustrate compliance - 1) Lifecycle methodology document/ testing procedures; 2) Records of test sign-off 3) Actual test results 4) "Permit to Operate" (a gateway review before release to production) records (note some groups have not introduced permit-to-operate)

N.B. The two remaining Control Categories "Application Logical Access Controls" & "Access Administration Process" are not covered by the CMM

Views from Project Managers - Cross Business Ecommerce

Gerald O'Leary – CBT (E-Trading)

“Before we started there was no predictability; the business was crying out for us to commit to milestones, and the motivation of the team was low.

Now the improvement of performance is recognized by the business and the motivation is back as their work hours become more predictable and business partnership has grown.

Another benefit of having well know roles and process was that we were able to double the size of the team rapidly and rapidly integrate and reap benefit from these additional resources.”

Views from Project Managers - Rates Technology

Bill James

Business Manager, Front Office Rates Technology

The CMMI model allows flexibility in approach, and deployment should be based on the type of organisation. Off-the-shelf solutions from other groups are rarely appropriate - you need to firstly consider how you operate and then derive the processes which address the model.

By deploying CMMI, we were able to improve our project management processes without degrading our delivery capability and business relationships.

People in Technology have a real appetite to review the way they work and propose both process- and toolset-related improvements, both in terms of project management and development best practices.

Views from Project Managers - Cross Business Ecommerce

Helen Altshuler

“As a manager I have seen that our process improvement efforts have Working to achieve the CMMi Level 2 for the FAMIS team helped to get more organized in project planning and monitoring.

It also made the team more aware of all aspects of project and release management, whether they are involved in them or not.

The team also benefited from adopting the Release Dashboard approach, where all release related documentation and standard procedures are stored. It also helped our business users to understand our project lifecycle and be more involved in it.”

Views from Project Managers - Equities North America

Joe Sapienza

“It increased the speed of our development lifecycle in that we standardized much of the process.

It increased the quality of our product. The practice of code review, in particular, was extremely beneficial

We became predictable to our users and increased their level of confidence in us.

As a manager, it offered me a new level of transparency into what my team was working on and how they were going about it.

Absolutely a worthwhile undertaking. If you want to know what your team is capable of, get them to CMM Level 2. You'd be surprised!”

Views from Project Managers - Asia Treasury, Credit & Rates AD Hong Kong

“Benefits:

- Improvements in project planning & management
- Deliver higher-quality and standard deliverables
- Better project monitoring by senior management
- Improve communication with users and among team member as consistent approach/process is followed
- With the standard process, successes are repeatable

Challenges:

- Strong commitment is required from senior management and users
- Additional overhead to a small size project with tight schedule & limited resources
- Continuous effort to refine and tailor the process to minimize the overhead without losing focus on control and monitoring.”

Views from Project Managers - Sydney Equities AD



Colin Munro

“The road to CMM level 2 was a challenging learning experience.

Having to describe our processes helped us to better understand them. With better understanding came the opportunity for improvement.

The CMM model introduced extra processes that initially seemed foreign, but are now institutionalised.

The end result is a more consistent approach to software development.’

Views from Project Managers - Asia-Pacific Equities Research

Harvey Milner

“As a manager I have seen that our process improvement efforts have contributed greatly to the success of the team, the quality of the software that we build and the overall service that we offer. Through CMM we have become true partners with our business’

Benefits that I’ve noticed include:

- More time spent on productive activities rather than fixing problems
- Less of a blame culture - processes not individuals are the focus
- We saved money, We spend less time on 3rd level support and more time developing.

In summary, over the last couple of years we’ve gone through a lot of change as a team in response to changing business needs. CMM has given us a reference point of consistency. Change – bring it on.”