Beyond Lessons Learned -

Planning and Writing **Case Studies** to Integrate
Improvement Measurement into Your Improvement Cycle
SEPG Conference, March, 2004
Orlando, FL, USA

Process Improvement Asia (Shanghai) Ltd
Process Advantage Technology, Inc.

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Workshop Objectives

- Be able to develop a case study that will help you evaluate process improvement work
- Get started with the plan and with the case study

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Introductions

Allow me to introduce myself -

Mac Patrick
   SCAMPI & CBA-IPI Lead Appraiser
   - Process Advantage Technology
      – Benicia, CA
   - Process Improvement Asia
      – Shanghai, China

Helping define and achieve process improvement goals

- Expectations for this tutorial session?

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What you need…

1. Case study plan template and example
2. Case study project mpp
3. Case study template and example
4. Issue matrix template and example
5. Your "starter" business goals, issues, improvement methods
6. Your plan, and your case study outline

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What Are the Logistics?

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Agenda
议程

- Purpose of Case Study
- How to produce a Case Study
- Develop your own Case Study
- Summary

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Agenda

1. Purpose of Case Study
2. How to produce a Case Study
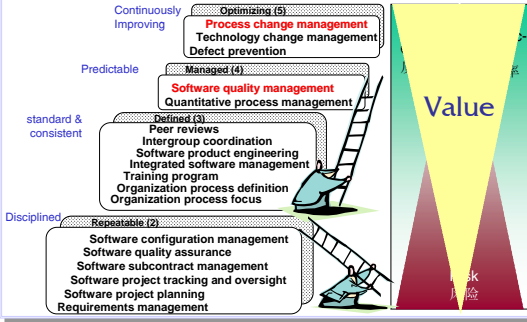3. Develop your own Case Study
4. Summary

What is a Case Study?

Dictionary definition of "Case Study"

1. A detailed analysis of a person or group, especially as a model of medical, psychiatric, psychological, or social phenomena.

2. A detailed, intensive study of a unit, such as a corporation or a division within a corporation, that stresses factors contributing to its success or failure.

The Software CMM®

Continuously Improving	**Optimizing (5)**
	Process change management
	Technology change management
	Defect prevention
Predictable	**Managed (4)**
	Software quality management
	Quantitative process management
standard & consistent	**Defined (3)**
	Peer reviews
	Intergroup coordination
	Software product engineering
	Integrated software management
	Training program
	Organization process definition
	Organization process focus
Disciplined	**Repeatable (2)**
	Software configuration management
	Software quality assurance
	Software subcontract management
	Software project tracking and oversight
	Software project planning
	Requirements management

Value

Exercise: Which is best, and why?

- Individually,
  - Rank the presented case studies from best to worst
  - What made the best one best?
  - What made the worst one worst?

Capability Maturity Model Integrated®

ML5 CAR OID QPM
ML4 OPP OEI DAR ISM IT RSKM IPM OT OPD OPF
ML3 VAL VER PI TS RD CM PPQA
ML2 MA SAM PMC PP REQM

CL1 CL2 CL3 CL4 CL5

Value

Case Study Examples – which is "best"

- (Good or bad) examples
  1. SEI Published Case Studies
  2. PSP & CMM Case Study
  3. Sunyard Case Study
  4. PSH Case Study
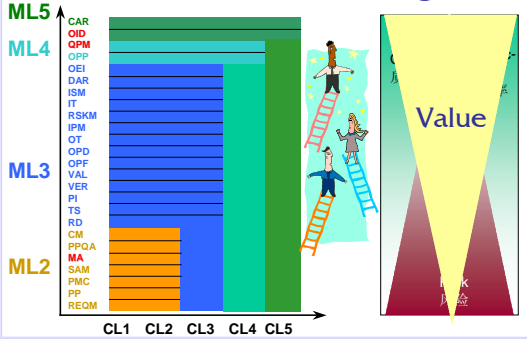 5. Baosight Case Study
  6. Example case study

Exercise: Which is best, and why?

- Individually,
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  - What made the worst one worst?
- Report

A Process Improvement Model

- 4 Evaluate Improvement's Effect, Determine Learnings
- 1 Gather Information Determine Sponsorship Decide Strategy
- 3 Implement the Selected Improvements
- Diagnose* Present Process & Identify Issues to Solve
- 2 Select Improvements* Based on Business Needs & Establish Means to Implement

1.& 2. Where to define the case study
3. Collect information
4. Where the case study is written

Or, See SEI's IDEAL℠

Types of case study

- **Situation or baseline**
  - particular processes
    - e.g. Estimation process
  - a project
  - a technology
    - e.g. New technology adoption
- **Change**
  - improvement projects
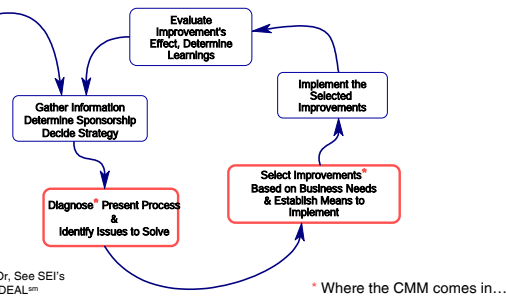
Ideally, the case study work is done…

1. At initiation, when business goals and problems with supporting those business goals are identified, identify the problems that the case study will examine
2. When planning improvements, establish the measurements and data collection related to the identified issues
3. Collect data during the improvement
4. Prepare the case study using the data gathered as a big part of Lessons Learned

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A Process Improvement Model

- Evaluate Improvement's Effect, Determine Learnings
- Gather Information Determine Sponsorship Decide Strategy
- Implement the Selected Improvements
- Diagnose* Present Process & Identify Issues to Solve
- Select Improvements* Based on Business Needs & Establish Means to Implement

Or, See SEI's IDEAL℠

* Where the CMM comes in…

If you do it all at the end…

1. Review or reconstruct the business goals and issues that led to the decision to improve

2. Find useful historical measurements

3. Prepare the case study

Review the business goal

The first step in process improvement work is to set business goals that the SPI projects support, e.g. ~

- Increase the speed of development

- Improve product quality

- Reduce re-work cost

- Better control the relationship with customers

- Improve the professionalism of the work force

How can you demonstrate whether these business goals are met?

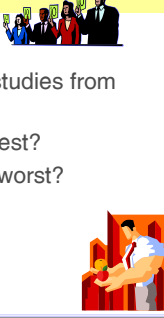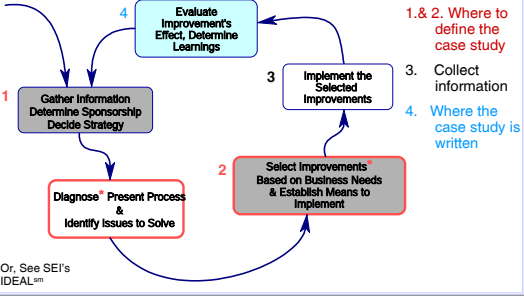Case Study Workshop, SEPG 2004   ©Process Advantage Technology, 2003   Version 1.00, page 19

Determine the audience?

Once we have set the business goals and know the purpose of our case study, who cares about the progress and result of process improvement work?

- Senior managers / sponsors
- Project managers
- Engineers
- Industry
  - Customers
  - Competitors
  - Other partner companies

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Exercise: Your business goals

- Individually, write down the business goals your organization presently has that will be supported by process improvement

- Report

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Describe the benefits of the case study for us

Case studies can help us to ~

- Understand our experience in the improvement project

- Describe how much improvement (e.g., start to end, and compared to plan)

- Communicate what we learned from our experience

- Capture our history for future reference

- Maintain or get more sponsorship

- Market our strengths

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Purpose of case study

- Illustrate ideas, for teaching and communicating
- Sell an idea or technology
- Summarize the good experience and lessons learned for next stage improvement work

…by evaluating what we have done in the improvement cycle and publishing the results

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Benefits of case study for others

Case study could let others~

- Understand how the benefits of process improvement project were achieved
- Use our successful experience to start or further their process improvement work
- Use our lessons in their future work
- Know about our achievements, to improve our company image

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Example

- Business goal & related SPI project
  - Increase revenue by starting more projects
  - improve project start up time
- Purpose of the case study
  - Communicate to sponsors and other managers how the goal was achieved
- Audience
  - Sponsoring managers and other stakeholder managers in the organization
- Benefit of doing the case study
  1. Able to compare to other improvement projects
  2. Summarizes the results, so that they are visible

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Agenda

- Purpose of Case Study
- How to produce a Case Study
- Develop your own Case Study
- Summary

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Exercise: your purpose

- In groups
  1. Describe a business goal and a related SPI project

  2. What is the purpose of your case study project, related to that SPI project

  3. Who's the audience(s) for the case study?

  4. What's the benefit of doing the case study?

- Report

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Materials to use…

- Example project plan
- Project plan templates
  - MSWord
  - MSProject
- Case study example

- Case study template

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Case study purpose summary

- What present organizational business goals will SPI help achieve?

- What is the purpose of your case study?

These all need to be included in your case study "project charter"…. Next

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Case study plan content

1. Purpose
2. Scope
3. Roles & responsibilities
4. Risk
5. Schedule
6. Others

Look at the case study plan example
   Case Study Plan Example.doc

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1. Purpose

- Business goals of overall process improvement
- Reasons for or expectations of developing case study
- Benefits of developing case study

4. Risks to case study project

- For each risk, identify
  - Description
  - Possibility
  - Impact
  - Solution/contingency

2. Scope

- Organization scope
- Content scope
- Time period

These 2 sections describe the information in "project charter"

5. Schedule

- Identify the tasks
- Develop the schedule
  - MS Project   -or-
  - Table matrix
- Track the schedule along with the project

3. Roles and responsibilities

- Describe the roles and responsibilities of the case study project
  - Project leader
    - e.g.: SEPG leader
  - Team member
    - e.g: SEPG member, project leader
  - Support member
    - e.g: project leader, senior manager

5. Schedule - 1

- Project Management -
  - Kick-off meeting
  - Initiate/review plan
  - Project status/meetings

5. Schedule - 2

- Case study development
  - Identify issues
  - Each issue
    - Identify improvement approaches
    - Collect Information
    - Analyze Information
  - Consolidate information
  - Write case study
  - Review case study
  - Publish case study

With a plan…

- Just follow the plan!   ;-)

- Often, the most difficult part of writing case studies is to decide what to write about

- The secret weapon =

Issues

6. Others

- Could include,
  - Training plan

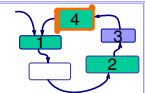 - Coordination plan

  - Processes and tools in use

Next!

1. *Business goals*
2. *SPI projects purpose*
3. *Case study plan*
4. **Issues**
5. **End State**
6. **Means to achieve**
7. **Tasks**
8. …

Things to be looked at all through the case study project

- Previous case studies
- SPI plan
- Process work products from the last SPI cycle
- Project implementation data

Method overview (step 1)(1)

At the start:
1. Identify related business goals
   E.g. Increase the number of projects in progress

2. Identify purpose for the case study
   E.g. Communicate the results of the improvement to sponsors

3. Identify issues (problems)
   1. What prevents the business goals from being achieved?
   2. What will be solved by the improvement project?

   E.g. project plans aren't consistent- some are too detailed, some are too sketchy; generally, it takes too long to make a good project plan
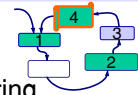
Method overview (step 1)(2)
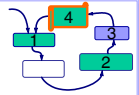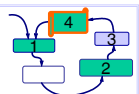
At the start:

4. Describe the situation after the improvement is complete (end)

    E.g. project plans are consistent and appropriate for type of project, and generally take less time to prepare

5. Describe the measurements, tools, or mechanisms needed to measure or describe the change from present problem to end situation (means)

    E.g. SQA results show compliance to standards and process; time spent preparing project plans stabilizes and decreases per type; peer review defects of project plans stabilize and decrease by type

Method overview (step 2)

- When planning improvements:
  1. Identify the measurements or other information that is needed (based on "means")
  2. Identify and plan how to collect those measurements or other data
  3. Include collection of the measurements in the project plan for the improvement project

Method overview (step 3)

- Follow the plan

- Collect the data according to the plan

Method overview (step 4)

- When analyzing data and writing the case study:

  1. Decide if issues have been solved, or if they may be included in future case studies

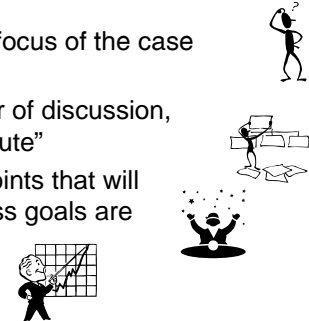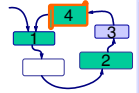 2. Note actual results and end state, after the improvement

"Issues"

- These are the focus of the case studies

"A point or matter of discussion, debate, or dispute"

Issues are the points that will show if business goals are met or not…

Report on Issues in Case Studies

- Most business goals have several issues
- One case study shouldn't try to describe too many issues
  - Over complicated
  - Not focused
- Many issues may be partially solved in projects, but remain issues through cycles of improvement
- The Issues Matrix is a good tool to manage case study issues

Case Study Examples – what issues?

(Good or bad) examples

1. SEI Published Case Studies
2. PSP & CMM Case Study
3. Sunyard Case Study
4. PSH Case Study
5. Baosight Case Study
6. Example case study

Identify the issues – 2

Create the issue list
– Identified at the start of the improvement, or if not, need to do this now, before continuing with case study development
– Inherit issues from previous case studies
– Consolidate issues so that they are
  • Important to the organization and relate to organization's business goals
  • Aren't redundant
  • Are measurable

The issues should be small, not too broad in scope

An Issues Matrix Organizes Case Study Content

• List your issues in an Issues Matrix

• For each issue to be included in a case study

  – Describe the expected situation after the improvement project is over and the issue is solved

  – What mechanisms or measurements were used to cause and to measure the solution

Issue Matrix Example

Example of issues

Issues are problems with …
– Products
– Processes
– Resources
that *should* help achieve business goals,
and are problems that *will be* solved by the improvement project
Use the -

Case Study Issue Matrix Template

Identify the issues – 1

Best done in a team setting, with managers participating
– Participants could be:
  • SEPG
  • Project managers
  • Senior engineers
  • SQA, SCM, and other support team

Examine the Case Study Example

• Look at section 2.1 of the case study example to see examples of issues in a case study

Specify improvement method

For each issue, specify the improvement method you adopted

– Review process improvement plan and current status

– Talk with project team

– Talk with SEPG and SQA

Collect and analyze information –1

- For each issue and corresponding improvement method, identify the related information that will be collected
  – Measurement data that describes/characterizes the issues in the case study (before, during, after)
  – Stories (Text)
  – Measurements need to be "normal", from typical projects (beware of "noise" from unusual projects or situations)
- Review similar information from previous case studies and other evaluation evidence (e.g. previous project postmortem evaluation) to describe the starting point

Exercise: 1. Identify your issues 2. Specify improvement method

- In groups, using the Issues Matrix ~
  – For the business goals and purpose described in earlier exercises
    • Identify issues
    • Describe expected results
    • Describe mechanisms and measurements that will show the change
  – Post issues and approach in an Issues Matrix
- Report

Collect and analyze information –2

- Collect this information in each SPI stage

- Analyze the measurement data and consolidate stories to show SPI results
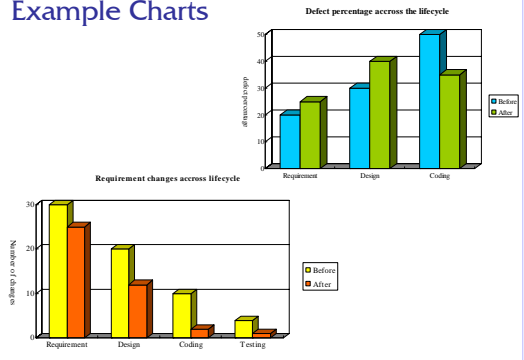
  – Charts
  – Tables

Examine the Case Study Example

- Look at section 2.2 of the case study example

Example Charts

Examine the Case Study Example

- Look at section 2.3 of the case study example

Plan

- Create the plan for your case study using

  – Your standard project plan materials

  – PIA's templates

Write the report

- Edit PATech/PIA's case study template to write your own case study report

- Have the case study reviewed by
  – Marketing

  – Management

  – Lawyers

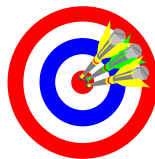### Exercise: case study tasks (1)

- In groups

  – Start your own plan by using our template

    - Purpose (Project Plan)
    - Scope (Project Plan)
    - Issues (Issues matrix)

- Report

Agenda

- Purpose of Case Study
- How to produce a Case Study
- Develop your own Case Study
- Summary

Examine the case study plan example

- Look at the mpp for a case study project
  Case Study Plan.mpp

Exercise: case study tasks (2)

- In groups
  - Discuss the tasks in the case study project

    - Table
    - Or MPP
  - Adapt the tasks to suit your issues

- Report

1. Organization Profile

- This section should be a brief overview of your company and organization, it may include:
  - Company background
  - Company structure and size
  - Organizational structure and size
  - Nature of work (products and services)

Write

- Use the Case Study Template as the outline for your case study report

2. Process Improvement Program

- This section introduces your process improvement background and current progress

  - Issues covered

  - Improvement approaches

  - Information collection and analysis

Case study template contents

1. Organization profile
2. Process improvement program
   - Issues Covered

   - Process improvement approach

   - Information collection and analysis

3. Achievement & benefits gained
4. Lessons learned
5. Next steps

3. Achievements & Benefit gained

- This section may include,

  - Changes in the systems, policies, procedure infrastructure
  - Practical internal improvement, e.g. quality cost, value, service efficiency
  - Practical external achievements, e.g. service improvement, satisfaction, reputation
  - External recognition and enhanced profile
  - Specific gains
  - Non-issue benefits or problems

4. Lessons Learned

This section may include

– Planning and approach to change and improvement
– Management of change
– Impact on staff
– Lessons to circulate and use again
– Setbacks and pitfalls to avoid

Exercise: apply the outline

• In groups
  – What other topics will you have to include in your outline?

• Describe your outline

Typical lessons learned examples

• "Process improvement is a long-term effort which requires leadership and long-term commitment from executive management. Middle management must stay involved, and technical community must buy in."
• "Define the measurement very carefully"
• "Make sure the definition of measures are actually followed."

Review

• Plan for appropriate reviews
  – Managers
  – Lawyers
  – Marketing
  – SEPG

5. Next Step

• This section may include -
  – How improvements will be systematically maintained
  – Future targets and aims

Publish

• Arrange to publish
  – As an article in a news letter or periodical
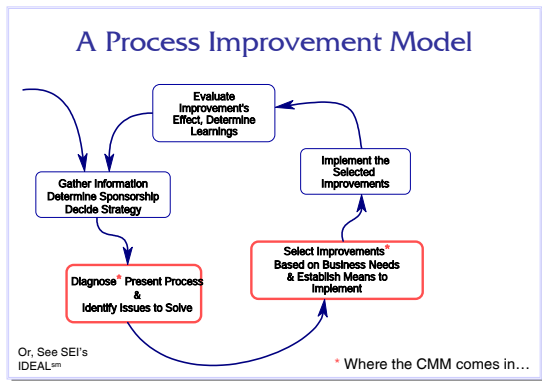 – Website
  – Internal document
  – Etc.

Agenda

- Purpose of Case Study
- How to produce a Case Study
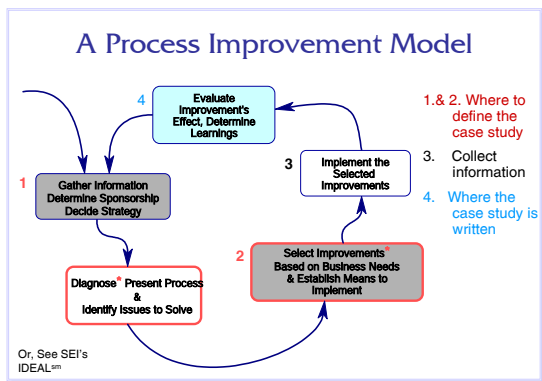- Develop your own Case Study
- Summary

Complete the case study

- Assign team
- Complete the planning
- Work the plan
  - Collect, or identify and collect information about issues
  - Consolidate issue information
  - Write the case study
  - Review/edit
  - Publish

A Process Improvement Model

Evaluate Improvement's Effect, Determine Learnings

Gather Information Determine Sponsorship Decide Strategy

Diagnose* Present Process & Identify Issues to Solve

Select Improvements* Based on Business Needs & Establish Means to Implement

Implement the Selected Improvements

Or, See SEI's IDEAL℠

* Where the CMM comes in…

What we have covered

- Case study plan template and example
- Case study project mpp
- Case study template and example
- Issue matrix template and example
- Your "starter" business goals, issues, improvement methods, plan and case study

A Process Improvement Model

4 Evaluate Improvement's Effect, Determine Learnings

1 Gather Information Determine Sponsorship Decide Strategy

Diagnose* Present Process & Identify Issues to Solve

2 Select Improvements* Based on Business Needs & Establish Means to Implement

3 Implement the Selected Improvements

1.& 2. Where to define the case study
3. Collect information
4. Where the case study is written

Or, See SEI's IDEAL℠

Summary

- Consider the measurement of identified issues before and during the process improvement work
- Case study result may create proposals for SPI
- Focus on specific issues,
  - recommend not more than 5 in one case study
    - Do more than one case study
    - Carry over issues to future improvement projects
- Case studies can be regarded as the mirror for our SPI work
- Case study work is part of the SPI project

Download materials from -
http://www.patech.com/sepg2004.htm

Mac Patrick

Thank you!

Any questions?

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