ABN-AMRO

ESTABLISHING A MEASUREMENT PROGRAM IN A CMM LEVEL 1 ORGANIZATION

(… It isn't easy!)

Practical Software Measurements Conference

Keystone, Colorado

July 23, 2002

Agenda

* Corporate Background
* The InSPIRE Initiative
* The Nine Impact Measures
* Challenges
* Conclusions

Corporate Background

* International Financial Institution headquartered in Amsterdam
* Ranked 7th in Europe, 13th globally (on assets)
* Presence in 70 countries, 3500 branches,
  110,000 Employees
* Largest foreign bank in US and Brazil
* US: LaSalle National Bank in Illinois
  Standard Federal (and MNB) in Michigan
  ABN AMRO Mortgage Group, nationally ... etc.
* Assets: $560 Billion globally

CMM INNITIATIVE IN NORTH AMERICA

InSPIRE

(Integrate Software Process Improvement Really Effectively)

Project Description

Improve and standardize the way IT plans, monitors, controls and executes systems development projects:

* Develop repeatable processes for Project Planning and Reporting, Requirements Elicitation and Management, Configuration Management, and Sub-Contract Management
* Train and mentor IT and BU personnel in the new processes
* Combine maintenance activities into regular software releases
* **Develop a Measurement Program to show benefits (quantitatively and qualitatively)**
* Utilize the Capability Maturity Model (CMM) as the approach and measure of progress (Attain CMM Level 2)

Systems Development Methodology is not included in this Project, but it is a parallel activity

InSPIRE 2002 Scope

* **Complete two Pilot CMM Implementations**

* **Implement CMM concepts in two major projects**

* **Show and quantify benefits** (improvements in productivity, unit cost, product quality, time to market, customer satisfaction, etc.)

Lessons Learned

BUs have come to realize the value of the discipline and thoroughness introduced by CMM

They were skeptical, but they have become proponents

Their testimonials:

* Detailed requirements prior to Development result in less rework and shorter delivery times - Formal baselines and signoffs enable better control of changes
* Facilitated sessions bring all parties together and result in better communications and common understanding - Manage expectations better, and improve customer satisfaction
* Formal Project Reporting increases visibility of project status and eliminates surprises
* **Measures are necessary to assess impact and provide feedback for continuous improvement**

The 9 Impact Measures

Measure	Calculation
1. Estimating Accuracy – Effort	(Actual labor hours - estimated)/estimated
2. Estimating Accuracy – Schedule	(Actual calendar months – estimated)/estimated
3. Productivity	Function points/labor months
4. Unit Cost	Dollars/function points
5. System Delivery Rate	Function points/calendar months
6. Requirements Volatility	Requirements added, changed, deleted/total baselined requirements
7. Client Satisfaction	Ratings by clients
8. System Test Effectiveness	Defects found in System Test/total defects
9. Delivered Defect Density	Defects found in Production/function points

Challenges

Measurement Program Phases:

1. **Design** - What will the measures be?
2. **Define Data Sources** - Where will the information come from?
3. **Establish Baseline** - Where are we now?
4. **Communicate** - Train staff
5. **Collect Data**
6. **Generate Measures**
7. **Analyze**

Challenges - Design

Relatively easy

* **Determine the objectives**
  - Express in relative terms (Normalize)
  - Define a unit of work
  - Measure:
    - •Productivity/Unit Cost
    - •Product Quality
    - •Time to Market
    - •Customer Satisfaction
    - •Estimation Accuracy
* **Design measurements to satisfy objectives**

Challenges - Define Data Sources

Relatively Difficult

* **Define required data elements**
  - Estimated and actual labor hours
  - Estimated and actual calendar months
  - Project costs
  - Number of requirements
  - Testing detects
  - Production detects
* **Clearly specify data elements**
* **Identify where they will come from and how**
* **Define how work units will be computed**

In Level 1 organizations, most of the data either does not exist (and has to be created)**, or it is scattered** (and has to be organized and centralized)

Challenge - Establish Baseline

Difficult

* **It is a long normally intensive process**
* **Since very little** (nothing?) **exists, it has to be created, project by project, piece by piece**
* **Since the measurement culture does not exist, people are not very cooperative and usually reject the baseline**
* **Mechanics -**Identify sample projects
  - Work with Project Managers to "create" the measures
* **Level 1 organizations may not have a lot of sizeable projects to include in the baseline**

Challenge - Communicate

Difficult (We thought it would be easy)

* The Measurements Team should be knowledgeable
* The training material must be well organized, very specific and well presented.
* Continuous communications, exchange of ideas and feedback is a must to refine the process
* One-on-one mentoring is absolutely critical, but it takes time

Challenge - Collect Data

Very Difficult (Hell !!)

* In a Level 1 organization, there may not be many sizeable projects
* It takes time and effort to collect metrics data
* The data may not be accurate or consistent - verification is necessary
* Use of application packages complicates situation
* Documentation is not always available to count function points. It is expensive to create it
* People will try to avoid submitting metrics
* Data submission must be very simple

Challenge - Generate Measures

Easy

* **Apply the formulas**
* **Review measures with appropriate Management** (Project, Development, Client)**, before further use**
* **Summarize by various management levels**
* **Generate measures for internal work only** (what **we** produce)

Challenge - Analyze

Relatively Difficult

* **Productivity and unit cost are most appealing to our clients**
* **Measurements should reflect types of projects** (mainframe vs. client/server vs. web; home grown vs. packages, etc.)
* **If a Baseline does not exist, analyze the trend**

  (… but you must have a lot of observations!)
* **Be careful what external baselines you compare yourself to**

Conclusions

A Measurement Program is absolutely necessary

But,

* **For Level 1 organizations avoid it, if you can**
* **Wait until your processes are established and mature**

On the other hand,

* **Start "preaching" early to begin the culture change**
* **Start with a Pilot first - You'll learn a lot**
* **Start simple - You cannot think everything from the start. Refine the baseline as you go**

Remember,

* **It is difficult, expensive and time consuming**
* **It requires a lot of determination, patience, persistence and self-discipline**

. . . It isn't easy

but

it can be done