



Software Process Improvement Initiatives in Thailand

Dr. Kanchit Malaivongs
Fellow, Royal Institute of Thailand



Topics

- **Software Industry in Thailand**
- **Software Park and SW Process Improvement**
- **SPI@ease Project**
- **SEI and CMMI**
- **SIPA**
- **TQS**
- **Conclusion**



Software Industry in Thailand

- **Computers were used in Census and education in Thailand around 1960**
- **Early applications had a lot of difficulty-**
 - **Lack of experts**
 - **Lack of machines and programs**
 - **Lack of knowledge transfer**
 - **Lack of ability to accommodate Thai Characters in data, programs and reports**



Need for Software Industry

- **Around 1985, MOSTE saw the need to strengthen software industry.**
- **A committee was appointed but no action plan was developed**
- **It is hard to convince people at that time because the PC era was very new and people just started to use more PCs.**



Establishment of NECTEC

- **Nectec (National Electronic and Computer Center) was established in 1986 to help push research in Electronics and Computer including Software technology**
- **Many students were granted scholarships to study abroad and came back to be researchers**



Software Park Thailand

- **Nectec helped establish software park Thailand in 1996 with objectives to**
 - **Be a central place for Thai software promotion activities,**
 - **Providing advanced training in SW**
 - **Initiate approach to strengthen SW Industry**
 - **Push public and private organizations to work together to solve SW problems and obstacles.**



Software Park and SEI

- **Nectec has tried to get support from SEI long before the establishment of SWP**
- **The connection was possible when SEI opened up and used CISE to promote SEI's products**
- **We have been helped by CISE to start our software process improvement program which leads to the adoption of SW CMM and CMMI**



SW CMM

- **SW-CMM was developed by SEI around 1990 as a model of software community practices and was well received by SW industry world wide**
- **CISE helped trained Thai experts to think about SW process improvement around 1997**
- **Six SW-CMM instructors and six CBA-IPI lead assessors were trained.**
- **More than 20 companies adopted SW-CMM**



CMMI

- **In 2000, SEI announced a new model: CMMI (Capability Maturity Model Integration) to replace SW-CMM**
- **SWP needed to train SW experts to be able to teach and appraise SW organizations that adopt CMMI**
- **Due to limited budget, only a few persons could be trained and the CMMI activities are slow**

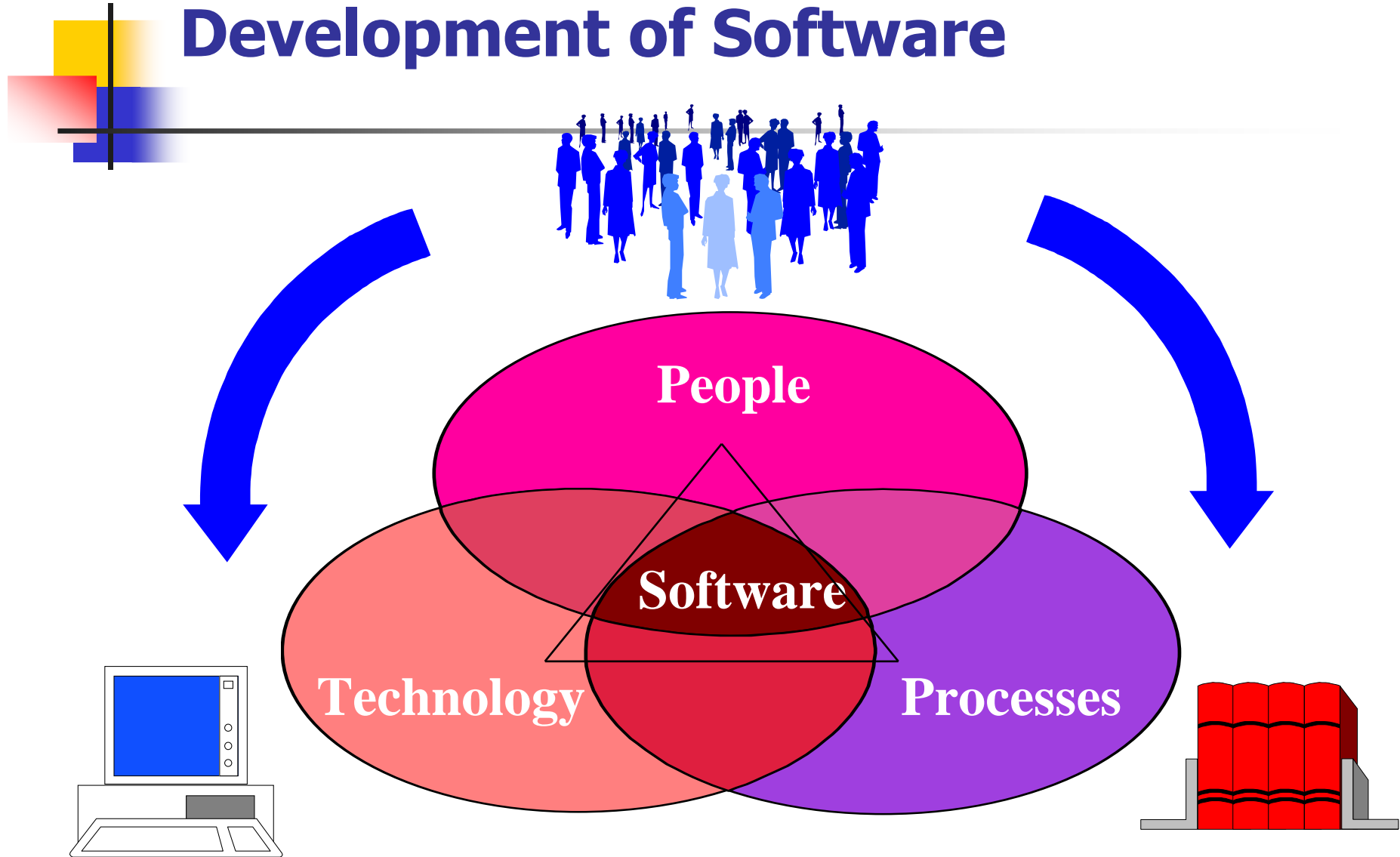


What is Software Process?

- ***A J Lattanze* at Carnegie Mellon University gave the meaning of Software Process as**

"a set of activities, methods, practices, and transformations that people employ to develop, enhance, and maintain software and the associated artifacts"

Development of Software





Why emphasizing process capability?

- **Industry must always be able to predict its product quality, time to produce products, needed resource, manpower and performance**
- **However, software development is usually unpredictable, not finished on time, and required more budget.**
- **Most notoriously, the finished products do not meet the customers' requirements.**



Software Process Capability

- **Software Process Capability** describes the range of expected results that can be achieved by following a given software process
- **Organizations having higher SW Process Capability levels will surely be able to achieve better results.**



Software Process Performance

- **represents the actual results achieved by following a software process**
 - **most individuals and organizations do not measure how much effort and resources are spent in developing software => they cannot improve the performance from lessons learned**
 - **must measure what you are doing, to know what you can do in the future (*capability*)**



Organizational Maturity

- **is the extent to which a specific set of specific processes is explicitly defined, managed, measured, controlled, utilized, and effective**
- **mature software organizations have the *capability to perform* in a consistent way to produce software**



Capability, Performance, and Maturity

Performance

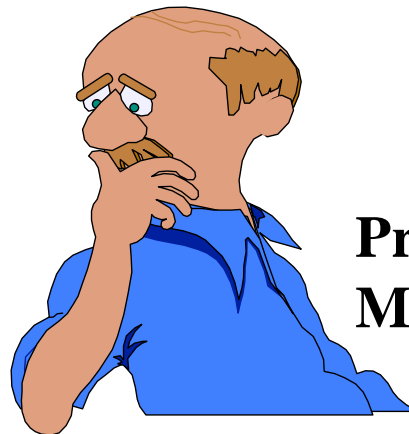
“we achieved N defects and T schedule slip”

Capability

“we can expect N defects and T schedule slip”

Maturity

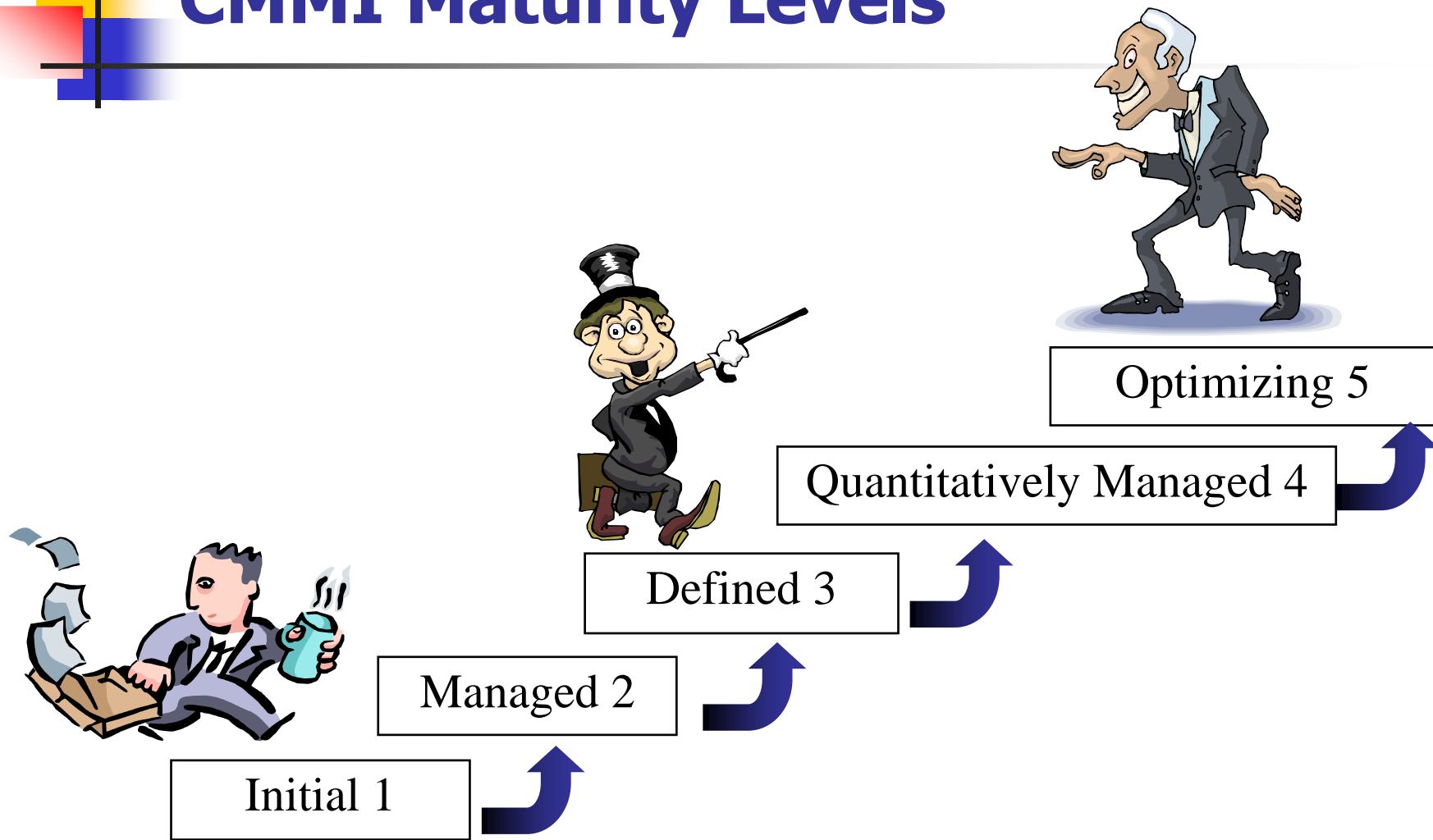
“the degree of variation in capability and performance”



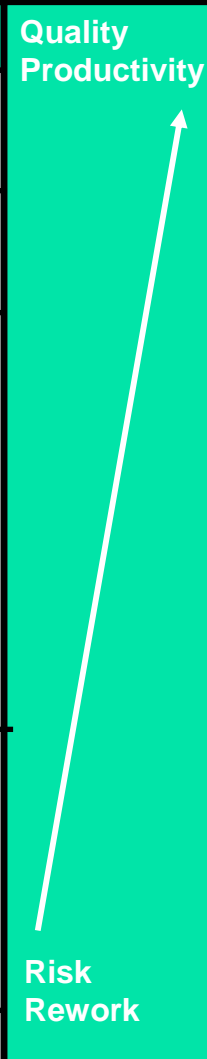
**Project or Program
Manager**

From A J Lattanze's "The Emerging Integrated Capability Maturity Model"

CMMI Maturity Levels



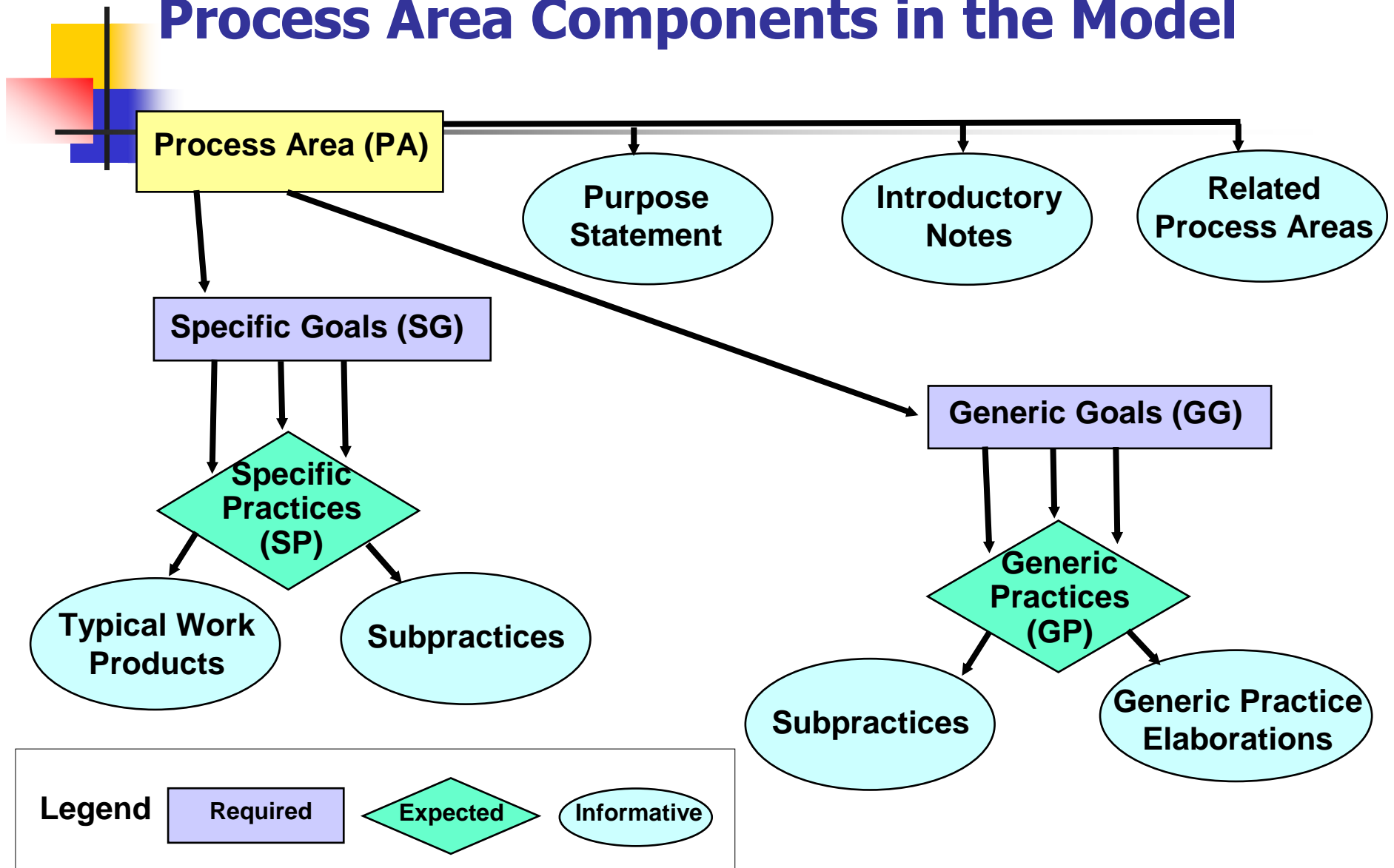
Staged Representation: PAs by Maturity Level

Level	Focus	Process Areas	Quality Productivity
5 Optimizing	<i>Continuous Process Improvement</i>	Organizational Innovation and Deployment Causal Analysis and Resolution	
4 Quantitatively Managed	<i>Quantitative Management</i>	Organizational Process Performance Quantitative Project Management	
3 Defined	<i>Process Standardization</i>	Requirements Development Technical Solution Product Integration Verification Validation Organizational Process Focus Organizational Process Definition +IPPD Organizational Training Integrated Project Management +IPPD Risk Management Decision Analysis and Resolution	
2 Managed	<i>Basic Project Management</i>	Requirements Management Project Planning Project Monitoring and Control Supplier Agreement Management Measurement and Analysis Process and Product Quality Assurance Configuration Management	
1 Initial			

Continuous Representation: PAs by Category

Category	Process Areas
Process Management	Organizational Process Focus Organizational Process Definition +IPPD Organizational Training Organizational Process Performance Organizational Innovation and Deployment
Project Management	Project Planning Project Monitoring and Control Supplier Agreement Management Integrated Project Management +IPPD Risk Management Quantitative Project Management
Engineering	Requirements Management Requirements Development Technical Solution Product Integration Verification Validation
Support	Configuration Management Process and Product Quality Assurance Measurement and Analysis Decision Analysis and Resolution Causal Analysis and Resolution

Process Area Components in the Model





Implementation of CMMI

- **Initiation to adopt CMMI**
- **CMMI project starts**
- **Select consultants**
- **Form a Software Process Improvement Team and join SPIN(et work)**
- **Study current practices**
- **Create software processes and other related procedures, standards, etc.**
- **Review and modify processes**



Implementation of CMMI 2

- **Start pilot the use of CMMI in a real project and modify the processes**
- **Train staff to use SW processes in all projects**
- **Thinking about appraisal**
- **Select lead appraisers**
- **Gap analysis and modification**
- **Appraisal**
- **Implement improvement**

The logo for SPI@ease features a stylized graphic on the left consisting of overlapping colored squares (yellow, red, blue) and a black crosshair. To the right of this graphic, the text "SPI@ease" is written in a bold, blue, sans-serif font.

SPI@ease

- **In 2006 SWP tried to push CMMI among Thai SW companies**
- **In 2007 SPI@ease project started with**
 - **26 companies participated**
 - **25 SW instructors became observers in the SW development activities**
 - **ITAP participates as a funding agency**



SIPA: Software Industry Promotion Agency

- **A public organization within the Ministry of Information and Communication Technology**
- **Established September 23, 2003**
- **Vision**
 - **SIPA takes Thai software industry to the world market.**



SIPA's Mission

- **1. Develop the standard of software personnel and organization.**
- 2. Develop software product, innovation, and services up to the international standard.**
- 3. Collaborate with partners, develop market network and public relations both internal and international level.**
- 4. Coordinate and resolve problems on the implementation of one-stop service for software industry.**
- 5. Promote the application of Thai software products in every industry.**
- 6. Promote the intellectual property protection on software products.**



SIPA and TQS

- **SIPA supported the Association of Thai Software Industry to develop another software process model – TQS**
- **At present about 100 SW companies are adopting this TQS**
- **TQS will be further modified to match with ISO 29110**
- **SIPA also supported CMMI for large SW organizations.**



Conclusion

- **Several Thai organizations are trying hard to promote the use of SW process models**
- **The support aims at**
 - **Companies to get incentive to improvement**
 - **SW instructors to learn how software is actually developed so that they can use the knowledge to teach their students.**

