CMMI CERTIFICATION PROGRAM

GRANT COMPLETION REPORT

July 7, 2011

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USAID JORDAN ECONOMIC DEVELOPMENT PROGRAM

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USAID/ECONOMIC GROWTH OFFICE (EG)

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1.0 GENERAL INFORMATION

CMMI® for Development from the Software Engineering Institute at Carnegie Mellon University, USA is an improvement approach that provides organizations with the essential elements of effective processes. CMMI can be used to guide process improvement across a project, a division, or an entire organization. CMMI helps integrate traditionally separate organizational functions, set process improvement goals and priorities, provide guidance for quality processes, and provide a point of reference for appraising current processes.

The CMMI-DEV has five main maturity levels, as Figure (1) below shows. CMMI Level 3, which is the main concentration for Jordan at this stage, is usually obtained within 14 months. This includes a number of phases, which are planned with a specialized consulting organization. It is estimated that the complete cost on each participating company will be in the proximity of $50,000.

Capability Maturity Model – Integrated

Level	Focus	Process Areas	Result
5 Optimizing	*Continuous process improvement*	Organizational Innovation & Deployment Causal Analysis and Resolution	Productivity & Quality
4 Quantitatively Managed	*Quantitative management*	Organizational Process Performance Quantitative Project Management	
3 Defined	*Process standardization*	Requirements Development Technical Solution Product Integration Verification Validation Organizational Process Focus Organizational Process Definition Organizational Training Integrated Project Management Risk Management Decision Analysis and Resolution	
2 Managed	*Basic project management*	Requirements Management Project Planning Project Monitoring & Control Supplier Agreement Management Measurement and Analysis Process & Product Quality Assurance Configuration Management	
1 Initial	*Competent people and heroics*		

Figure 1: CMMI-DEV Levels.

The CMMI-DEV concentrates on developing the structure of the production method in order to increase the quality and the efficiency of the method. This is done on a number of phases, which includes studying the current structure of the organization, providing feedback and consulting on required upgrades, and finally coordinating and auditing the process. The graph below, Figure 2, shows the phases and involved personnel.

Figure 2: CMMI-DEV phases and involved personnel.

2.0 BENEFITS OF CMMI

CMMI® is currently considered to be the most widely accepted and adopted process improvement approach worldwide, that provides organizations with the latest best practices for product and service development and maintenance. Specifically:

- **Better quality than the competition** in all phases of the product lifecycle, from product conception to deployment.

- **Greater speed and agility**, to beat the competition in introducing new and enhanced features and technology.

- **Cost reductions** so that products can be offered at lower price points than the competition.

The CMMI-DEV aims at increasing quality and reducing costs. The estimated return on investment (ROI) is 4.7: 1. In addition to tangible returns, CMMI increases customer satisfaction, ability to manage risks, and innovation. Therefore, CMMI has more than a temporary effect; it enhances production and creates sustainability.

Though the CMMI has some economic drivers to maintain the competitiveness of the country as a whole and support industry growth, it also has a direct effect on organizations' performance, productivity and efficiency all contributing to better organization planning, processes, products…etc. and therefore results in better organization growth in terms of revenues and employment.

A. Internal benefits of CMMI to the organization include:
- Improved Schedule and Budget Predictability
- Improved Cycle Time
- Increased Productivity
- Improved Quality (As Measured by Defects)
- Increased Customer Satisfaction
- Improved Employee Morale
- Increased Return on Investment
- Decreased Cost of Quality
- Increased Ability to Manage Risks
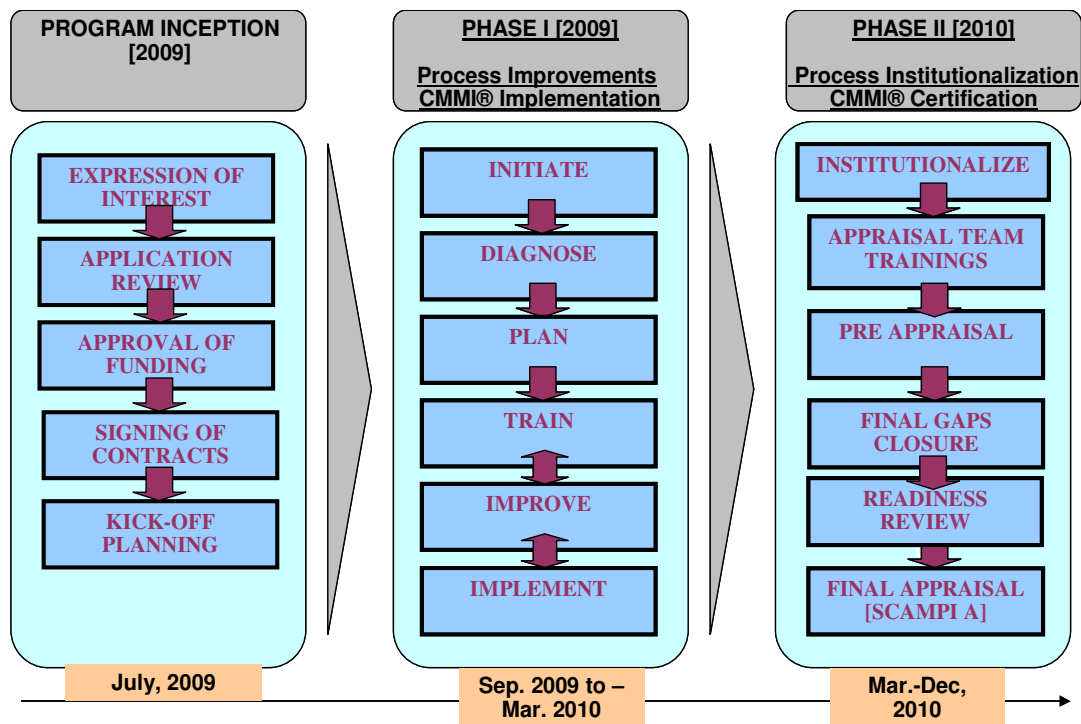- Increased Innovation (in long term)

B. External benefits of CMMI include:
- Appraisal and Certification (of the supplier) provides increased confidence to the buyers of products and services, regarding the suppliers' ability to deliver the desired quality, on-time and within budget.
- Generating Business: CMMI® is often one of the qualifications that buyers look for while selecting a supplier of IT services/ outsourcing deals. Buyers of ICT services often use it for evaluating vendor capabilities. Most organizations consider a CMMI Certification as a Passport for Outsourcing.
- CMMI provides increased marketing mileage and supports building the brand as a High Quality Organization, in addition to increased ability to win bids and negotiate better on deals.
- Attracting Talent. High maturity organizations tend to typically attract best talent in the industry.

3.0 FULL ACTIVITY DESCRIPTION

The entire Implementation and Certification journey has been divided into 2 phases as depicted in the below diagram:

- Organizations can choose to sign-up for each phase separately or for both phases together.
- Going through Phase I is a critical to the success of Phase II.
- Organizations typically take between 10-15 months for end-to-end CMMI® level 3 process.

PROGRAM INCEPTION [2009]	PHASE I [2009] **Process Improvements CMMI® Implementation**	PHASE II [2010] **Process Institutionalization CMMI® Certification**
EXPRESSION OF INTEREST	INITIATE	INSTITUTIONALIZE
APPLICATION REVIEW	DIAGNOSE	APPRAISAL TEAM TRAININGS
APPROVAL OF FUNDING	PLAN	PRE APPRAISAL
SIGNING OF CONTRACTS	TRAIN	FINAL GAPS CLOSURE
KICK-OFF PLANNING	IMPROVE	READINESS REVIEW
	IMPLEMENT	FINAL APPRAISAL [SCAMPI A]
July, 2009	Sep. 2009 to – Mar. 2010	Mar.-Dec, 2010

3.1 DESCRIPTION OF PHASE 1 ROADMAP ACTIVITIES: 2009/2010

Process Improvement & CMMI® Implementation.

#	Step	Activity	Activity Description
1.	INITIATION	Overview to CMMI® Training	• Sensitizes the entire organization to CMMI® framework (a must for all core team members for the initiative) • Understand the spirit & philosophy of the model required for business benefit. • Develop capability to understand the gaps, create a realistic action plan together with the consultants. • Provide a kick-off to the CMMI® initiative and building a culture of process and quality.
2.	DIAGNOSE	CMMI® Gap Analysis and Diagnostic Assessment	• Study the current state of processes and practices within the organization. • Understand strengths and improvement opportunities through alignment with the business context. • Identify Gaps vis-à-vis the CMMI® Process Areas. • Share the findings with the senior management / organization team.
3.	PLAN	Action Planning	• A detailed project plan for the end-to-end Certification initiative, based on the findings of Gap Analysis. • Created with the joint consensus of the organization stakeholders and consultant. • An action plan with specific activities, timelines, milestones, owners, deliverables, etc.
4.	TRAIN	Competency Development Workshops and e-learning modules	• Based on the action plan for process improvements, the core members and various process action teams undergo conceptual competency development training and workshops from the QAI Global Institute. • These will be planned and scheduled by QAI after the Kick-off visit, in phases spread over 3-4 months, in alignment and as per the requirements of the process definition and improvement activities for maximum impact. The competency development is provided through two modes: a. Instructor Led Workshops b. E-learning modules **A. Sample Instructor Led Workshops** **Core team of practitioners from each organization**

#	Step	Activity	Activity Description
			will attend the below indicative workshops in a public mode: • Project Management [2 days] • Software Testing [2 days] • Software Estimation [2 day] • Quality Assurance [1 day] • Software Metrics [1 day] • Peer Reviews [1 day] • Internal Auditor training [1 day] **B. E-learning on Software Engineering and Management from the QAI Global Institute** **[Visit: www.edistalearning.com for more information]** **Up to 40 learner licenses shall be provided to each organization for the following courses.** • Software Project Management • Software Testing • Software Estimation • Software Quality Management • Configuration Management • Overview to CMMI® The e-learning provides additional continuous training support during the journey (specially to those involved in the implementation, who change roles, new joiners, process owners, or those who missed the Instructor training. Its helps build a common understanding and language of Software Engineering and Management and support building a culture of process and quality.
5.	IMPROVE	Consulting, Spot Checks, Guidance for Process Improvements	• While the competencies are being built within the organization through workshops/ training, parallel effort towards process definition, improvements and documentation are initiated. • This step broadly includes the below activities: • Process architecture base lining and design. • Handholding the task forces for Process definition as per PA prioritization strategy. • Reviewing Process Asset Library framework and its up- gradation. • Alignment to business objectives/ organization culture. • Addressing specific organization pain areas • Sharing of best practices from other global organizations • Formalizing internal best practices from various projects

#	Step	Activity	Activity Description
			• Exploring Process Automations if and as required using home-grown or 3rd party tools. • Review and sign-off on the QMS. • QMS training by EPG to practitioners and project staff. Typically, process areas are prioritized based on specific organization context and business needs. The prioritized PA's are defined/ improved in phases. For example, initial focus could be Project Management and Basic Engineering Practices, and then the focus could be Advanced Project Management practices (IPM, RSKM), Decision Analysis & Resolution, etc. **QAI's Best Practices Warehouse** **Visit:** **http://www.qaiglobal.com/minisites/BPW/Index.asp** Access to Database of more than 800 Best Practice papers related to the field of Process Improvement, Software Quality, Engineering and Management, from over 150+ High Maturity IT companies extended to each organization in order to facilitate organization learning.
6.	IMPLEMENT	Consulting, Spot Checks, Guidance for Piloting, Implementation and Roll-outs	The processes are piloted in identified projects. The experiences used to refine the QMS are then rolled out to the entire organization. QAI consultants provide: • Identification of pilot projects and support during pilots • Fine-tuning of the QMS based on pilot feedbacks • Roll-out strategy • Facilitation/ handholding / best practice sharing throughout implementation • Spot check Implementation Reviews

3.2 DESCRIPTION OF PHASE II: ROADMAP ACTIVITIES: 2010

Process Institutionalization and CMMI® Certification.

#	Step	Activity	Activity Description
7.	INSTITUTIONALIZE	Consulting, Spot Checks, Guidance for On-going Implementation and Institutionalization	Implementation is regularly reviewed for compliance and effectiveness, schedule risks highlighted if any, methods to optimize the journey shared, knowledge repository deployed and used in the organization. Organizations also start to see initial benefits of

			improvements such as:
			-- Improved visibility into project status
			-- Clear process compliance index
			-- Reduced complaints from customers
			-- Access to historical experiences
			-- Reusable knowledge assets resulting in reduced effort , etc.
8.	APPRAISAL RELATED TRAINING	Mandatory Trainings for the Appraisal Team Members.	There are two essential training requirements for all the candidate appraisal team members (ATMs) who will participate in the formal appraisal along with the QAI's SEI Lead Appraiser. Typically Six (6) persons/ ATM's are required for the Appraisal, and hence they need to be trained on the below. 1. SEI Intro to CMMI® - 3 day official SEI workshop. 2. Appraisal Team Member training- 2 days Both the above workshops are conducted by SEI Authorized Lead Appraiser.
9.	PRE-APPRAISAL	Mock Appraisal to test readiness for formal Appraisal	This appraisal is conducted by the SEI Lead Appraiser, and would also help to identify the Final Gaps, which needs to be filled prior to the Final Appraisal to ensure success.
10.	CLOSE FINAL GAPS	Gaps Closure Consulting	Based on the Pre-Appraisal findings, the consultants further support the organization to close the gaps through offline/ onsite consulting support.
11.	READINESS REVIEW	Formal readiness review	This is a formal readiness review conducted by the SEI Lead Appraiser, typically 1-2 months before the final appraisal/ certification in order to review the Practice Implementation Indicators (PIID's), and ensure readiness for the formal appraisal.
12.	FORMAL APPRAISAL	SCAMPI^{SM} A Appraisal	Formal SEI Registered and Authorized SCAMPI-A Assessment which includes the following (with typical man-days): a. Perform SCAMPI Preparation and Planning b. Perform On-site Appraisal c. Appraisal wrap-up and SEI reporting

4.0 PROGRAM IMPLEMENTATION

The CMMI Certification Program was launched in Jordan with the Assistance of USAID Jordan Economic Development Program in October 2009 with 7 Jordanian companies.

#	Date	Company	Ownership	Number of Employees	CMMI Level
1	8/1/2009	Estarta	Jordanian	300	3
2	8/2/2009	Optimiza	Jordanian	300	3
3	8/4/2009	BEAT	Jordanian	80	3
4	8/5/2009	STS	Jordanian	276	3
5	8/6/2009	TechnoSys	Jordanian	30	3
6	8/6/2009	ATS	Jordanian	50	3
7	8/10/2009	ESKADENIA	Jordanian	147	3

The 7 Jordanian companies have all successfully completed the first phase of the program in October 2010.

At the end of 2010, the ICT market has been facing challenges in projects locally and regionally throughout the year 2010/2011 due to the local and regional economy slow down. This has been reflected in slow project cycles for companies and hence a delay in the implementation of CMMI standards over company projects.

Moreover, BEAT had faced some challenges as a company over 2010 and 2011, though have been able to complete phase 1 of the CMMI project successfully, they could not engage into the second phase of the program and opted to withdraw from participating in the rest of the CMMI program.

The remaining 6 companies will have successfully completed the CMMI Certification program by Jun 2011.

4.1 DETAILED PROGRAM STATUS

Activity per approved Agreement	Description of Activity	Date of Activity	Achievements/ Results	% Complete	Comments/ Concerns
Milestone 1	OCMMI/Gap Analysis	Dec 2009	Gap Analysis for ESTARTA done in Jan 2010	100%	Fully Completed
Milestone 1	Public Workshops: SQB, ESPM, Estimation	Dec 2009	42 Attendees from the 7 companies	100%	Fully Completed
Milestone 2	Consulting 1	Jan/Feb 2010	2 Days consulting visit	100%	Fully Completed
Milestone 3	Public Workshops: RM, Testing, Metrics	Mar 2010	Mar 28-Apr 01 2010	100%	Fully Completed
Milestone 3	Consulting 2	Mar 2010	Completed	100%	Fully Completed
Milestone 4	Consulting 3	May 2010	Completed	100%	Fully Completed
Milestone 5	Spot Check	Jul 2010	Completed.	100%	Fully Completed
Milestone 5	Consulting 4	Jul 2010	Completed	100%	Fully Completed
Milestone 6	Consulting 5	Sep 2010	Completed	100%	Fully Completed
Milestone 6	ICMMI	Oct 2010	Completed	100%	Fully Completed
Milestone 7	Consulting 6	Jan 2011	Completed	100%	Fully Completed
Milestone 8	Pre-Appraisal	Nov-Dec 2010	Completed	100%	Fully Completed
Milestone 9	ATM TT	Jan 2011	ATS final certification is pending final review.	100%	ATS Planned in 4th Week of June 2011. BEAT has withdrawn from the Program.
Milestone 8	Readiness Review	May 2011	ATS final certification is pending final review.	100%	ATS Planned in 4th week of June 2011. BEAT has withdrawn from the Program.
Milestone 10	SCAMPI A	Jun 2011	ATS final certification is pending final review.	100%	ATS Planned in 3rd Week of July 2011. BEAT has withdrawn from the Program.