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Project: Identification of IT quality standards and certifications (required on target markets)

D1: Target market report on recognized IT quality standards

Version: 01

Type: final

Date: 21 – 05 – 2014

This publication was produced for review by the United States Agency for International Development. It was prepared by Trajkovski & Partners for SEGURA Consulting LLC under the Contract Number AID-OAA-C-13-00139, Regional Economic Growth.

Skopje 2014

Document History

Document control

Only the computer version is controlled version. All printed versions are uncontrolled versions.

Revision history

Version	Date	Revision descriptions
01	21.05.2014	Final report

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REG Beneficiaries	List	Electronic

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1. Introduction

The purpose of the REG Project is to promote broad based, inclusive and sustainable economic growth in the Eastern Europe & Eurasia (E&E) region through greater intraregional economic integration and harmonization in the E&E region and other markets. Project activities focus on improving competitiveness and increasing financial sector stability by promoting economic integration within the region and building economic linkages to the EU and other markets. The main outcomes for the IT sector within the REG project should be: increased competitiveness and ability to sell in EU markets through new standards and certifications; increased participation in EU projects; and trade missions/B2B support to increase sales to target markets.

To achieve this objective, REG will seek to increase awareness of and access to relevant IT quality standards and certificates required for competitive presence in the identified key target markets for the IT companies from the Balkan Region.

During the SEE ICT Forum platform in November 2013, representatives from 6 countries (Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia), agreed that the most relevant target markets for the companies from the Balkans are: United Kingdom and Ireland, Scandinavian countries, the Netherlands, Germany, United States, Turkey and Middle East. REG has initiated two surveys to identify the IT quality standards and certificates most required and recognized in these target markets and the gaps in the capabilities of leading IT service and product providers in the Balkan region. Possible IT certification models include: Kanban, SCRUM&XP, CMMI, PSP, ITIL, ITMark, ISO, Cyber Security and Resilience Management, and others.

One survey will identify the current trends in the IT industry standards, models and certification schemes required in the target markets noted above.

The second survey will assess the IT industry standards and certificates prevalent in our region and the gaps from the demand from target markets. In addition, the analysis will include list of national/regional service providers to support firms in obtaining these IT industry standards and certificates for each of the Balkan countries.

The findings from these two surveys will be used to inform future activities of the REG project.

This report is the result of the survey conducted with representatives from the target markets.

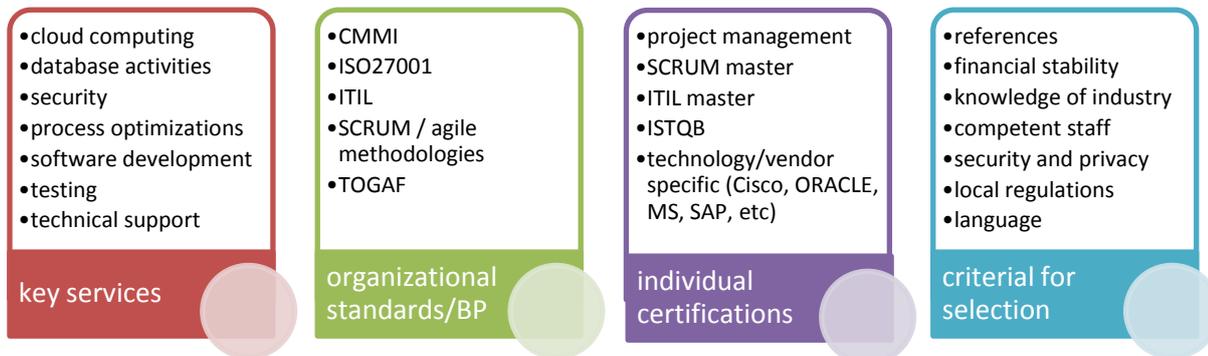
2. Executive summary

The objective of this analysis is to identify the current trends in the IT industry standards, models and certification schemes required in the target markets, specifically: United Kingdom and Ireland, Scandinavia (Norway, Finland, Sweden), Turkey, The Netherlands, Middle East (Jordan, Israel, Palestine), USA and Germany.

The focus was given on the current trends on standards and certifications for improving the quality of the companies (IT suppliers and clients) and products as well as on the current trends on standards and certifications necessary for exporting to these target markets

The analysis was done partly through direct interviews with over 40 stakeholders from the target markets, and in part by doing a documentation review of available IT market reports and other analysis. In detail the methodology for the analysis is explained in Chapter 3.

The key findings include:



2.1. ISO27001 – Information Security Management System

Source: <http://www.iso.org/iso/home/standards/management-standards/iso27001.htm>; www.27000.org/iso-27001.htm

ISO27001: information security management system standard is a certifiable standard published and managed by International Standards Organization. Main focus is on ensuring confidentiality, integrity and availability of organizational information assets including information, systems, processes, people, equipment, etc.

It is paired with ISO27002 and a series of additional standards that serve as guiding documents and provide the industry best practice for ensuring security and privacy of information assets.

ISO27001 is recognized in all target markets, with a varying number of actual certificates issued. Most certified companies are in the target markets: UK, USA and Germany.

2.2. CMMI – Capability Maturity Model Integration

Source: www.sei.cmu.edu/cmml/

Capability Maturity Model Integration (CMMI) is a process improvement training and appraisal program and service administered and marketed by Carnegie Mellon University. Under the CMMI methodology, processes are rated according to their maturity levels, which are defined as: Initial, Repeatable, Defined, Quantitatively Managed, Optimizing.

CMMI is recognized in all countries, with a varying number of actual certificates issued. Required by many public institutions in USA or their contractors, especially for software development, but significant number of certified companies exists as well in Germany, Turkey, UK.

CMMI currently addresses three areas of interest:

- Product and service development — CMMI for Development (CMMI-DEV),
- Service establishment, management, — CMMI for Services (CMMI-SVC), and
- Product and service acquisition — CMMI for Acquisition (CMMI-ACQ).

2.3. SCRUM and SCRUM Master

Source: <https://www.scrum.org/>; <http://www.scrumalliance.org>

SCRUM is an iterative and incremental agile software development framework for managing software projects and product or application development. Its is organized around the concept that the development team works as a unit to reach a common goal. SCRUM enables teams to self-organize by encouraging physical co-location or close online collaboration of all team members and daily face to face communication among all team members and disciplines in the project.

SCRUM is facilitated by a **SCRUM Master**, who is accountable for removing impediments to the ability of the team to deliver the product goals and deliverables. The Scrum Master ensures that the Scrum process is used as intended.

SCRUM as a framework and methodology for software development is recognized in most of the target market, a bit lower in the Middle East countries. As a framework, it is not certifiable for companies, but companies can declare compliance and commitment to following the methodology. Requirements for SCRUM Master certified staff exists in the target markets but are not mandatory.

2.4. ITIL and ITIL Expert or higher

Source: www.itil-officialsite.com/

The **Information Technology Infrastructure Library (ITIL)** is a set of practices for IT service management (ITSM) that focuses on aligning IT services with the needs of business. ITIL is the base set of best practices giving guidance for the ISO20000 standard for IT service management.

The **ITIL Qualifications** scheme provides a modular approach to the ITIL framework, and is comprised of a series of qualifications focused on different aspects of ITIL Best Practice, to various degrees of depth and detail. The levels include: Foundation, Intermediate, Expert and Master.

ITIL is recognized in all target markets both among the users and providers of IT services. As a best practice framework it is not certifiable but companies can declare compliance and can implement the applicable practices and processes in their operations. Requirements for ITIL certified staff exists in the target markets but are not mandatory. Premium value is recognized in ITIL v3 expert or higher individual certifications.

2.5. TOGAF

Source: www.opengroup.org/togaf

TOGAF, an Open Group Standard, is a enterprise architecture methodology and framework used by organizations to improve business efficiency. As a framework for enterprise architecture it provides a comprehensive approach for designing, planning, implementing, and governing an enterprise information architecture. TOGAF covers the following levels: Business, Application, Data, and Technology.

As a methodology and framework it is not certifiable for companies, but individuals can obtain professional certification in two levels: Foundation and Certified.

TOGAF is recognized in all target markets, but more so in the countries where the sophistication and scale of the IT systems is on a higher level such a USA, UK, Germany, Scandinavia. Having a TOGAF certified staff is not mandatory but is considered as premium value.

2.6. Project Management: PMP and PRINCE2

Source: www.pmi.org; www.prince-officialsite.org

Project management is a constant requirement in all medium-term to long-term engagements. As there are various approach to project management, and it is an individual skill, there is no defined organizational certification even though there is an existing ISO standard for project management processes – ISO10006.

There are 2 dominant certifications for project management: **PRINCE2** and **PMP**. Their recognition varies from market to market as PRINCE2 is from UK while PMP is from the USA.

Requirements for PMP or PRINCE2 certified project managers exists in the target markets and are often mandatory. But, as both are rigid and structured, they do not go well in combination with SCRUM so you will not see a requirement for PMP or PRINCE2 certified project manager in companies requiring usage of SCRUM in the development process.

2.7. Individual vendor or technology specific certifications

There is a long list of vendor or technology based certifications recognized on the target markets, but they are not so much specific per country as they are per company. Most often found include:

- Microsoft certifications
- ORACLE certifications
- SAP certifications
- Cisco certifications
- Java certifications
- Huawei, Alcatel, Ericsson, ...

In such cases, certification is a mandatory requirement as it is a prerequisite for ensuring competence in dealing with the specific technology or product.

3. Methodology for the analysis

The methodology used for the analysis was designed in line with the time and resource constraints of the project, but at the same time with the main focus on achieving the objective defined as:

to identify the current trends in the IT industry standards, models and certification schemes required in the target markets.

- *the current trends on standards and certifications for improving the quality of the companies (IT suppliers and clients) and products*
- *identify the current trends on standards and certifications necessary for exporting to the target markets*

For the realization of the survey, we have identified experts directly linked with the specific target market through previous or current experience on that market, education in that market or other close ties.

Alongside with the survey, detailed documentation research was done to identify and analyze secondary sources of information about the target markets. A list with references to the used documents and publications is given in **Annex 5**.

3.1. Identification of stakeholders

The types of stakeholders to be involved in the analysis were initially identified in the Statement of work as:

- BSOs from the target markets,
- Consultancy companies,
- Official market reports from Gartner, EITO, WITSA, IDC or other relevant IT related sources,
- IT related NGOs and associations
- Companies from the target markets,
- Foreign companies that work for clients from the target markets for several years,
- Diplomatic representatives that are present on target markets
- Balkan Diaspora representatives from the target markets.
- Providers of the IT industry standards and certificates directly. All the data presented in the reports should be referenced.

The experts responsible for the specific target market identified their stakeholders, and made initial contact. The full list of identified stakeholders per target market is given in **Annex 1**. For each of them, the status is as well noted i.e. did the stakeholder actually take part in the survey or declined the request.

Minimum of 5 interviewed stakeholders per target market were required for a valid analysis.

Target market	Number of stakeholders	
	Contacted:	Responded:
United Kingdom  and Ireland 	20	6
Scandinavia Sweden  Norway  Finland 	17	4
Turkey 	11	5

Target market	Number of stakeholders	
	Contacted:	Responded:
Netherlands 	20	8
Middle East	15	11
Palestine  Jordan  Israel 		
USA 	11	9
Germany 	9	6

3.2. Design of the survey questions

The survey questions were designed by the entire team of experts based on the objective of the analysis. It was decided that they should be used as guiding questions for the interviews, and the experts should modify them based on the direction the interview was taking.

As various stakeholders have different perspective, questions were designed for the following groups of stakeholders:

- For IT companies (managers or employees in IT companies)
- For clients (users of products/services of IT companies)
- For certification bodies
- For IT associations in target markets

The detailed guiding questions are given in **Annex 2**.

To help the experts, a list of all identified and relevant IT quality standards and best practices was created. Each of the experts contributed in the creation of the list, based on his/hers previous experience and knowledge. This list was to be used in case the interviewee needed examples of the standards and best practices that we were asking about. This list is provided in **Annex 6**, and it groups the standards and best practices for three separate categories:

- List of IT Quality standards and best practices for companies/organizations
- List of standards for products and services
- List of certifications for individuals / IT professionals

The guiding questions were as well supported with a recommended text for the introduction to the survey and the project that with localization (i.e. translation) should have been to the identified stakeholders. Both the text and the questions were approved by USAID and the REG project prior to circulation.

3.3. Conduct of interviews

The interviews were conducted over a period of over one month, even though it was initially envisioned that the realization will be in the period 7.4.2014 – 18.4.2014. The delay was due to the Easter holidays in most of the target markets. The interviews were conducted primarily over phone, Skype, and Google Voice but as well in direct meetings with additional responses on email.

Even though a multitude of stakeholders were identified in each of the target markets, it was a challenge to get a commitment for the interview, as its relevance for the interviewees was marginal i.e. the results of the analysis were not bringing any benefit for the stakeholder.

In general, the interviews took approximately 30-45 minutes, depending on the type of stakeholder and whether they knew the questions in advance or not.

All interviews were documented and are given in **Annex 3**. For the purposes of the analysis, the results were aggregated by country and are presented in the following chapter.

4. Findings from the analysis

The main finding from the analysis of the target markets show that the global trends of outsourcing, off-shoring and near-shoring are relevant and applicable in the selected target markets, as they are driven by the economic situation that forces companies to look for opportunities for lowering costs in such modalities of cooperation.

In order to engage in outsourcing through near-shoring or off-shoring, the companies from the various target markets look at the country from where the outsourcing IT service provider comes from and the company itself. Among the criteria for selection of the country with varying importance across the target market countries are: language skills, IT talent pool and political stability. On the other side, the criteria for partner selection i.e. outsourcing IT service provider include: business or personal networks; common partner, friend, client or current and former employee; successful pilot project, experience in similar projects and innovative business model. In the countries analyzed, specific organizational certifications were not a mandatory requirement, but they are seen as differentiating factor, element of building trust and assurance of successful completion of the work. The situation is more rigid regarding individual certificates for specific expertise (vendor based or independent), which are a mandatory requirement in the cases when such expertise is critical for the outsourced work.

There are various barriers to entry that in general apply to the individual markets, but in terms of IT service provision, some of these market entry barriers can be more easily overcome than others. Language is a general barrier not as much in the service provision but more prominent in the introduction and negotiation stages. The EU directive for freedom of provision of services lowers the barriers in terms of necessity for incorporation in the target market.

4.1. Products and services mostly required on target markets

Based on the IT Market reports for Germany, Netherlands, Scandinavia and UK done by Cap Gemini in 2014, ICT Market in Turkey in 2012, as well as a State of Outsourcing Study 2013, conducted with the support of KPMG (detailed reference in **Annex 5**) it can be summarized that the main driver for using outsourcing in any of the analyzed target markets is **cost efficiency**. The secondary drivers differ among countries and include: deficit in ICT professionals, focusing on core competences, time-to-market, and access to better technology and better talent.

In order to put the analysis in perspective relevant for the objective of the project, initially the stakeholders were asked what types of services and products they were getting from external IT suppliers. That information was complemented with the documentation review of the target market reports from recent years mentioned above. The following table represents the summary results.

Target market	Products and Services used from external IT suppliers
United Kingdom  and Ireland 	<p>Diverse ICT products and services,</p> <p>Key market trends: cloud computing, mobile computing, database activities, storage, backups, security</p> <p>Specific external activities: networking / communications (39%), database activities (81%), storage / backups (49%), integration (81%), and security related activities (38%)</p>
Scandinavia Sweden  Norway  Finland 	<p>Services: IT service management, software development, ICT consulting</p> <p>Key market trends: web services, application software modules, SaaS, Application related services and BPO with high growth, vertical solutions,</p>
Turkey 	<p>Products: Hardware supply, Applications as Windows, MS Office, SAP Services: Software and hardware support, IT Cyber Security</p> <p>Notable specific about the market: Discrete outsourcing services in demand due to CIOs' tendency to maintain some control over their IT infrastructures. Large multinationals as Huawei, Ericsson, Vodafone are opening R&D centers.</p>
Netherlands 	<p>Services: information management, application management, management of network services, and end-user and service management; CRM system (SaaS); Mobile applications; E-banking; IT Services, Consulting, Business Analytics & Optimization, ERP, security, software, storage, disaster recovery, enterprise architecture, BPM, Smarter Planet, end-to-end system integration, remote system maintenance and support, Software testing</p> <p>Key market trend: application outsourcing and cloud services, as well as infrastructure outsourcing specifically data centers and enterprise networks</p> <p>Notable specifics about the market: deficit in ICT professionals; low barriers to entry; majority of domestic ICT companies are small Most of software development is done in country or by own subsidiary in other European country</p>
Middle East Palestine  Jordan  Israel 	<p>Diverse ICT products and services, specifically: Software development, Software as a service, Business Process Outsourcing and call centers, Animation and graphics, Quality assurance services (testing and audits), IT consulting, ICT training, ERP solutions</p> <p>Notable specific about the market: in the Middle East some of the countries are actively trying to take over the outsourcing business of the regional companies from the providers from Eastern Europe.</p>

Target market	Products and Services used from external IT suppliers
USA 	<p>Diverse ICT products and services, specifically: Professional network services / managed services, Technical support, Architecture Design, Integration services, Software development, Business Intelligence, Quality Assurance and testing Outsourcing mainly in IT help desk, Application development, IT infrastructure management, ongoing ERP maintenance.</p> <p>Key market drivers: reduce costs, greater flexibility to scale operations, more effective operations globally, meet regulatory requirements, gain access to talent and new technology, transform or reengineer processes, proven provider offerings</p> <p>Notable specific about the market: much longer experience in outsourcing then European companies and not only large companies are going for outsourcing. In the insurance sector, a balance of shared services (onshore) and outsourcing (offshore).</p>
Germany 	<p>IT resources, software development, network engineers, Cloud computing, Software testing, application development, BPO, infrastructure outsourcing, Telco services, IT services, maintenance</p> <p>Notable specific about the market : Germany's SME-sector being highly innovative and dynamic, but the focused on using local IT service providers for outsourcing</p>

Based on the Cap Gemini's *Application Landscape Report 2014*, **SMAC** is the new buzz word meaning: **"Social, Mobility, Analytics and Cloud"** and it depicts where organizations find their inspiration for innovative projects that deliver direct value to Business. Such products and services are easily extended across borders and present a good guidance on what is required on the target markets that are being analyzed as part of this project. From the same report, the following can be aggregated as overview on leveraged disruptive technology per target market:

Target market	SMAC			
	Social	Mobility	Analytics	Cloud
United Kingdom  and Ireland 	30%	50%	28%	60%
Scandinavia Sweden  Norway  Finland 	40%	46%	21%	40%
Turkey 	/	/	/	/
Netherlands 	34%	47%	26%	49%
Middle East Palestine  Jordan  Israel 	/	/	/	/
USA 	40%	67%	41%	71%
Germany 	34%	47%	26%	49%

^{"/} – no data available in the presented report

From this analysis, it can be concluded that there is **no significant limitation on the scope of services or products** that can be offered on these target markets, but some segments have higher potential such as application development, cloud services, software testing.

4.2. Current trends on standards and certifications

The market for ICT organizational and individual certification is constantly evolving and growing. Depending on the specific industry sector, country, expertise and even corporate culture, possession of such certificates or compliance with such international and/or industry best practices can be a factor in the business relationship.

The following table represents the main best practices and standards for IT quality grouped per topic area.

		Reference	
Strategic IT alignment		IT Infrastructure Library (ITIL)	Control Objectives for Information and related Technologies (CobIT)
IT governance		CobIT	ISO38500
Architecture and Information management	<i>Interfaces</i>	ISO8583	ISO20022
	<i>Reporting</i>	eXtensible Business reporting languages (XBRL)	
	<i>Enterprise Architecture</i>	The Open Group Architecture Framework (TOGAF)	
Solutions Delivery	<i>Applications Development</i>	Capability Maturity Model Integration (CMMI)	ISO15504
	<i>Project management</i>	Project management body of knowledge (PMBOK)	Projects IN Controlled Environments v2 (PRINCE2)
Service management and operations	<i>Service management</i>	ITIL	ISO20000
	<i>Data Center</i>	Tier standard	TIA 942
	<i>Health, Safety, Environment</i>	OHSAS 18001 ISO14001	
	<i>Business Continuity</i>	Business Continuity Institute Good Practice Guidelines (BCI GPG)	ISO22301
Information & Technology Security		Payment Card Industry Data security standards (PCI DSS) Privacy regulation	ISO27001, ISO27002
Workforce and resource management		e-Competence framework skills Framework for the Information Age (SFIA)	

A much more detailed list is provided in **Annex 6**, where the standards and best practices are grouped in three separate categories:

- List of IT Quality standards and best practices for companies/organizations
- List of standards for products and services
- List of certifications for individuals / IT professionals

During the analysis of the publicly available data from the certification bodies and the individual interviews with stakeholders from the target markets that are part of this project, we have identified the following generalizations:

Target market	Attitude towards standards and certificates		
	Importance of organizational standards	Recognition method	Importance of individual certifications

Target market	Attitude towards standards and certificates		
	Importance of organizational standards	Recognition method	Importance of individual certifications
United Kingdom  and Ireland 	High	Certification and self-declaration	High
Scandinavia Sweden  Norway  Finland 	Low	Self-declaration	Medium to High
Turkey 	Low	Certification	Medium
Netherlands 	Low	Self-declaration	Medium
Middle East Palestine  Jordan  Israel 	Medium	Self-declaration	Medium
USA 	Medium	Certification and self-declaration	Medium
Germany 	Medium	Certification and self-declaration	High

From this data we can see that **self-declaration and compliance** with international standards and industry best practices are generally accepted as a method of operations, but nevertheless, having third party i.e. independent certification of that compliance can speed-up the process of building trust and assurance necessary for starting the cooperation.

4.3. Focus on organizational certifications, frameworks and best practices

Based on the analysis of the publicly available information about **active certificates of organizational best practices and ISO standards** among companies from the ICT sector, specifically CMMI for software development, ISO9001 for quality management, ISO27001 for information security, ISO22301 for business continuity and ISO20000-1 for service management, the following table depicts the summary values per analyzed target market.

Target market	Certifications for management systems				
	CMMI	ISO9001	ISO27001	ISO22301	ISO20000-1
United Kingdom  and Ireland 	Low	High	High	Almost none	Low
Scandinavia Sweden  Norway  Finland 	Almost none	Low	Almost none	n/a	Minimal
Turkey 	Medium	Medium	Low	n/a	Minimal
Netherlands 	Minimal	High	Low	n/a	Minimal
Middle East Palestine  Jordan  Israel 	Low	High	Low	n/a	Almost none
USA 	Medium	Medium	Low	Low	Low
Germany 	Low	High	Medium	Almost none	Minimal

*Scale: <10: almost none, 10-25: minimal; 25-100: low; 100-200: medium; 200+: high; n/a: no information available

This assessment showed that ISO9001 is most represented management standard in the analyzed target markets by number of certificates, but it is more seen as a “*minimal requirements*” for any type of business regardless of the sector, as it is can be required for public procurement. As more relevant and actually recognized as ***premium value*** in the ICT sector are the ***CMMI and ISO27001***, for USA/Turkey and Europe respectively.

During the interviews, it was noticed that ***non-certifiable best practices and frameworks are more recognized and requested*** in IT outsourcing engagements. The following table gives an overview of the identified best practices per target market:

Target market	Identified best practices and frameworks required or recognized in IT outsourcing
United Kingdom  and Ireland 	<ul style="list-style-type: none"> • ISO27001 – for information security • ISO 38500 – for Corporate governance of IT • eToM – for teleco process management • CobIT – for IT governance • ITIL – for IT Service management • SCRUM – for agile software development • KanBan – for lean development • TOGAF – for enterprise architecture • ISO/IEC 15408 - for software development • ISO20000 – for service management • ISO22301 – for business continuity
Scandinavia Sweden  Norway  Finland 	<ul style="list-style-type: none"> • SCRUM – for software development • ITIL – for IT service management • TOGAF – for Enterprise Architecture • CMMI – for software development • RUP – for software development • Six Sigma – for quality in IT processes • ISO9001 – for quality
Turkey 	<ul style="list-style-type: none"> • ITIL – for processes in Service Management • Six Sigma – for process improvements • V-Shaped model - for the SDLC • ISO27001 – for information security • CobIT - for IT governance • SDCL – for software development
Netherlands 	<ul style="list-style-type: none"> • ISO/IEC 25010:2011 - for software development • ISO 12207 – for software lifecycle • ITIL – IT service management • COBIT – IT governance • SCRUM – agile software development • MVC – for web development • Django – for web development • CMMI – for software development • RUP – for software development • Six Sigma – for quality in IT processes • ISO9001 – for quality • MVC – for web development • ISO27001 – for information security

Target market	Identified best practices and frameworks required or recognized in IT outsourcing
<p>Middle East</p> <p>Palestine  Jordan  Israel </p>	<ul style="list-style-type: none"> • ITIL – for IT service management • CMMI – for software development • HIPPA – for privacy in health • PCI DSS – for security in financial transactions • BPM – business process modeling • TOGAF – for Enterprise Architecture • ISO9001 – process documentation • HIPPA – health data security • HL7 – health data • Project Management
<p>USA </p>	<ul style="list-style-type: none"> • SCRUM – for agile software development • CMMI – for software development • ITIL – for IT service management • KanBan - for lean development • PMBOK – for project management • ISO9001 – for quality management • ISO90003 – for quality in software development • ISO27001 – for information security • ISO20000 – for service management • ISO14001 – for environmental management • Security and privacy but commonly US domestic compliance. (HIPPA Act, CHCIO (Certified Healthcare CIO), PCI DSS, SOX)
<p>Germany </p>	<ul style="list-style-type: none"> • ITIL – for processes in Service Management • Six Sigma – for process improvements • ISO 14001 or EMAS – Environment Management • ISO 27002 – for Information Security compliance • SA8000 – Labor Management Systems • OHSAS 18001 – Health and Safety Management Systems • TOGAF – for Enterprise Architecture Design • SAP ABAP – for business applications in the logistics industry

Even though the sample size was small, it can be concluded that **SCRUM** is the predominant best practice for agile development, **ITIL** is the recognized best practice for IT service management. For the other segments/sectors, there are simply too many best practices and frameworks to choose from, and it is up to the pair of client and service provider to agree on the one that will be followed. It is usually the client that selects the methodology and /or framework for its own use, and then delegates it to the outsourcing service provider.

Aside of the organizational certifications or compliance with selected best practices, based on the IT Market reports for Germany, Netherlands, Scandinavia and UK done by Cap Gemini in 2014, ICT Market in Turkey in 2012, as well as a State of Outsourcing Study 2013, conducted with the support of KPMG (detailed reference in **Annex 5**), the following are the **criteria used for selection of outsourcing partner**:

Target market	Outsourcing selection criteria	Quality
<p>United Kingdom  and Ireland </p>	<p>Destination criteria:</p> <ul style="list-style-type: none"> • Language skills (78%) • Talent pool (69%) • Political stability (50%) <p>For the company:</p> <ul style="list-style-type: none"> • References from peers • Security and data protection mechanisms 	<ul style="list-style-type: none"> • Knowledge of evaluation, selection and purchasing procedures • Methodologies and certifications: Agile methods (Scrum), PRINCE2 • Compliance with international IT security management systems and standards (e.g. ISO/IEC 27001, ISO/IEC 15408) • Professional HR management for motivation, skills management • Project management skills for continuous work tracking and reporting
<p>Scandinavia Sweden  Norway  Finland </p>	<p>Destination criteria:</p> <ul style="list-style-type: none"> • Language skills, and talent pool more important than low costs except in Norway <p>For the company:</p> <ul style="list-style-type: none"> • F: low service rates, pilot and references – project engagement model • N: references, pilot – managed team engagement model • S: innovative business model, experience, pilot – various models 	<ul style="list-style-type: none"> • Professional HR management for availability of top talent • Project management skills for continuous work tracking and reporting • Dedicated teams
<p>Turkey </p>	<p>Local supplier preferred</p>	<ul style="list-style-type: none"> • Limited awareness for IT quality standards • Professional HR management services • Project management skills backed with certification (PMP).
<p>Netherlands </p>	<p>Destination criteria:</p> <ul style="list-style-type: none"> • Language skills (78%) • Talent pool (78%) • Political stability (58%); <p>For the company:</p> <ul style="list-style-type: none"> • successful pilot • experience, • innovative business model, • preference for managed/own team engagement models <p>Note: Independent certification is important but not critical</p>	<ul style="list-style-type: none"> • Professional HR management to minimize fluctuation, continual education • Project management skills for continuous work tracking and reporting • Small outsource teams

Target market	Outsourcing selection criteria	Quality
<p>Middle East</p> <p>Palestine  Jordan </p> <p>Israel </p>	<p>For the company:</p> <ul style="list-style-type: none"> Competence Previous assignments Understanding of the culture <p>Note: entry to the middle east is recommended through partners from the region (mainly Jordan). English is the business language in many of the Middle Eastern countries.</p>	<p>ISO 9001: Quality Management System is seen as only a marketing tool</p> <p>ISO 12207 or CMMI for software life cycle processes, based on self-declaration</p> <p>In Palestine, no awareness for ISO 22301: Business continuity management systems, or ITIL.</p>
<p>USA </p>	<p>For the company:</p> <ul style="list-style-type: none"> Financial Stability Knowledge of specific industry processes Track record to deliver standard operational services Capacity of delivery talent to add value beyond standard operations Culture of the provider's delivery organizations Delivery excellence 	<p>Proven and mature service offering</p> <p>Innovation: providing new and creative methods of achieving business value</p>
<p>Germany </p>	<p>For large companies:</p> <ul style="list-style-type: none"> Vertical expertise technical responsiveness and adaptability German language Onsite delivery capabilities Security and data protection <p>For SME:</p> <ul style="list-style-type: none"> integrated IT consulting and IT outsourcings Turnkey solutions Preference for local partners <p>Note: Independent certification is important</p>	<ul style="list-style-type: none"> Methodologies and certifications: Agile methods (Scrum), PRINCE2 Compliance with international IT security management systems and standards (e.g. ISO/IEC 27001, ISO/IEC 15408) Professional HR management to minimize fluctuation, continual education Project management skills: continuous work tracking and reporting

4.4. Focus on ICT professional's skills and individual certifications

During the interviews various **individual certifications or best practice frameworks were identified as recognized and requested** in IT outsourcing engagements. The following table gives an overview of the identified skills and certifications per target market:

Target market	Identified individual certifications required or recognized in IT outsourcing
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Target market	Identified individual certifications required or recognized in IT outsourcing
United Kingdom  and Ireland 	<ul style="list-style-type: none"> • ITIL v3, above foundation level • SCRUM Master – for agile software development • CISSP – for IT security • TOGAF – for enterprise architecture • PMP – for project management • PRINCE2 – for project management • P3M3 – for project management • Technology/Vendor Specific Certificates (such as Huawei, Ericsson, CISCO, Microsoft certifications)
Scandinavia Sweden  Norway  Finland 	<ul style="list-style-type: none"> • SCRUM Master – for software development • ITIL v3 above foundation level • ISTQB – for testing • TOGAF – for Enterprise Architecture • PRINCE 2 – for Project Management • Microsoft certifications • SAP certifications • Cisco network management certifications • CISA – for IT auditing • E-competence framework – ICT profiles
Turkey 	<ul style="list-style-type: none"> • ITIL v3 above foundation level • Six Sigma Black belt– for process improvements • PMP – Project Management • Microsoft certification for System Administration • Cisco certification for Network Management • Check Point certification Security Administration • Microsoft Share Point certification for Internal Document Management
Netherlands 	<ul style="list-style-type: none"> • ITIL v3 above foundation level • SCRUM Master – agile software development • SAP certifications • Microsoft certifications • PMP – for project management • MVC certifications – for web development • Certified Django developer
Middle East Palestine  Jordan  Israel 	<ul style="list-style-type: none"> • PMP – for project manager • ITIL v3, above foundation level • CMC – certified management consultant • TOGAF (individuals) – for enterprise architecture • Oracle certifications • Redhat Linux (RHCE, RHCT) • Certified Information Systems Security Professional (CISSP) • Systems Security Certified Practitioner (SSCP) • Certified Cyber Forensics Professional (CCFP) • Certified Ethical Hacker (CEH) • Cisco CCNA – for network management

Target market	Identified individual certifications required or recognized in IT outsourcing
USA 	<ul style="list-style-type: none"> • SCRUM Master – for software development • PMP – for project management • CISSP – for information security • ITIL v3 above foundation level • Security and privacy but commonly US domestic compliance (HIPPA, CHCIO, PCI DSS, SOX) • Vendor and Technology Specific Certificates <ul style="list-style-type: none"> - Microsoft - CISCO - Juniper - ORACLE - Alcatel Lucent
Germany 	<ul style="list-style-type: none"> • ITIL v3, above foundation level • Six Sigma Black belt– for process improvements • PRINCE 2 – Project Management • PMP – Project Management • Microsoft Share Point certification • Cisco and Huawei certifications – for infrastructure network projects • TOGAF certification for Enterprise Architecture Design • SAP ABAP certifications

One can note that even though there are varieties from market to market, there is a consistency in the required certifications for **project management, agile software development and vendor-based technology certifications** such as Cisco, Microsoft, Oracle and SAP. In the more developed markets, additional focus is given of security certifications.

Based on the IT Market reports for Germany, Netherlands, Scandinavia and UK done by Cap Gemini in 2014, ICT Market in Turkey in 2012, as well as a the Skills framework for IT professionals working in outsourced environment (detailed reference in **Annex 5**), most of the analyzed target markets had a significant commonality: shortage of ICT skilled staff on the local market, with a trend to grow. The **specific skills required for filling in the current shortage** through IT staffing or outsourcing are summarized in the table below:

Target market	Required Skills
United Kingdom  and Ireland 	<ul style="list-style-type: none"> • Key skills: Skills to develop integrated security solutions, and to manage risk; Project and integrated solutions management skills; Security maintenance skills; technical expertise in the new technologies • Most required skills for all positions: SQL, C, C#, .NET, Java, SQL SVR, ASP, Java Script, Agile and HTML • Technical skills which are hardest to fill: .NET/ASP, Dynamics, SharePoint, Visual Basic/Studio, C#, PHP and VMWare • Skills for PM: PRINCE2, agile, SAP, Scrum, C • Skills for BA: Agile, SQL, UML, SAP, <p>Note: individual certifications are extremely valued</p>

Target market	Required Skills
Scandinavia Sweden  Norway  Finland 	<ul style="list-style-type: none"> Key skills: Cisco CCIE, ITIL, PMP, Sun certified Java Programmer (SCJP), MCP, MCSE <p>Note: skills shortage for engineers, software development, data technicians. Job profiles and skill sets based on e-Competence framework 3.0</p>
Turkey 	<ul style="list-style-type: none"> Key skills: Technical support (network, software and hardware), Knowledge in project management and ITIL framework. <p>Note: Formal education and individual certifications are important factor</p>
Netherlands 	<ul style="list-style-type: none"> Key skills: Embedded development, web, mobile, enterprise, cloud Highest potential: software testing due to large local software development initiatives
Middle East Palestine  Jordan  Israel 	<ul style="list-style-type: none"> Key skills: Security, Network management, IT service management, Linux, specific technologies (SAP, Oracle, Microsoft,...), Project management, specific local regulations, security, software development
USA 	<ul style="list-style-type: none"> Key general skills: planning ability, project procurement ability, project management ability, system development ability, coordination ability, and flow management ability Key professional skills: Software engineering, Networking, Information security, Trend of IT product/cost, Procurement process and legal issues, Project management, Auditing and testing <p>Note: due to the size of the market, summarization of specific skills is not purposeful. Formal education and education background are important.</p>
Germany 	<ul style="list-style-type: none"> Key skills: Big data management and BI, iOS, Android programming, PHP, my SQL, Linux, Apache; IT security Java, .net, ABAP4, SCRUM, SAP, Oracle, PMP, TYPO3 <p>Note: Emphasis on formal education and certification</p>

5. Conclusions

This survey was focused on the identification of the relevant IT quality standards and certifications most required in the selected target markets for the companies from the Balkans, specifically: United Kingdom and Ireland, Scandinavian countries, the Netherlands, Germany, United States, Turkey and Middle East.

The following are the main conclusions:

5.1. Target market: UK and Ireland

<i>Openness for outsourcing or off-shore development:</i>	YES
<i>Main areas:</i>	networking / communications, database activities, storage / backups, integration, and security related activities
<i>Main drivers:</i>	Cost-efficiency, deficit in ICT skilled employees
<i>Most recognized organizational IT quality standards and best practices:</i>	CMMI, ISO9001, ISO27001, SCRUM, KanBan, TOGAF, ITIL
<i>Preference for verification:</i>	Certification and self-declaration
<i>Most recognized individual IT quality standards:</i>	PRINCE2, ITIL expert, SCRUM Master, TOGAF, Technology/Vendor Specific Certificates (such as Huawei, Ericsson, CISCO, Microsoft certifications)
<i>Most important factors for selection of partner:</i>	References, security and data protection, project management
<i>Comment:</i>	Sophisticated market, with strong ties to India for outsourcing

5.2. Target market: Scandinavia

<i>Openness for outsourcing or off-shore development:</i>	YES
<i>Main areas:</i>	web services, application software modules, SaaS, Application related services, vertical solutions
<i>Main Driver:</i>	Cost-efficiency
<i>Most recognized organizational IT quality standards:</i>	ISO9001, SCRUM, ITIL, TOGAF
<i>Preference for verification:</i>	Self-declaration
<i>Most recognized individual IT quality standards:</i>	PMP, SCRUM Master, ITIL Expert, ISTQB, TOGAF, Technology/Vendor Specific Certificates (such as SAP, CISCO, Microsoft certifications)
<i>Most important factors for selection of partner:</i>	Low service rates, successful pilot, references, innovative business model, project management
<i>Comment:</i>	Language is important; e-competence model and job profiles implemented and recognized

5.3. Target market: Turkey

<i>Openness for outsourcing or off-shore development:</i>	Limited
<i>Main areas:</i>	Software and hardware support, IT Cyber Security
<i>Main drivers:</i>	Strategies of multinational companies

<i>Most recognized organizational IT quality standards:</i>	CMMI, ISO9001, ISO27001, ITIL, CobIT
<i>Preference for verification:</i>	Certification
<i>Most recognized individual IT quality standards:</i>	PMP, ITIL expert, SixSigma, Technology/Vendor Specific Certificates (such as Checkpoint, CISCO, Microsoft certifications)
<i>Most important factors for selection of partner:</i>	References, skills, project management
<i>Comment:</i>	Mainly want to keep control of IT operations in-house; local partners preferred; general low awareness for standards and certifications

5.4. Target market: Netherlands

<i>Openness for outsourcing or off-shore development:</i>	YES
<i>Main areas:</i>	information management, application management, management of network services, and end-user and service management, software testing
<i>Main drivers:</i>	Deficit in ICT professionals
<i>Most recognized organizational IT quality standards:</i>	ISO9001, ISO27001, ITIL, SCRUM, MVC, CMMI
<i>Preference for verification:</i>	Self-declaration
<i>Most recognized individual IT quality standards:</i>	SCRUM Master, ITIL Expert, PMP, MVC, Django, Technology/Vendor Specific Certificates (such as SAP, Microsoft certifications)
<i>Most important factors for selection of partner:</i>	Successful pilot, references and experience, innovative business model, low fluctuation in staff, project management
<i>Comment:</i>	Most software development done onshore, small companies requesting outsourcing

5.5. Target market: Middle East

<i>Openness for outsourcing or off-shore development:</i>	Limited
<i>Main areas:</i>	Software development, SaaS, Animation and graphics, Quality assurance services, IT consulting, ICT training, ERP solutions
<i>Main driver:</i>	Cost-efficiency, new technologies and necessary skills
<i>Most recognized organizational IT quality standards:</i>	CMMI, ISO9001, ISO27001, TOGAF, ITIL
<i>Preference for verification:</i>	Self-declaration
<i>Most recognized individual IT quality standards:</i>	PMP, ITIL expert, TOGAF, Technology/Vendor Specific Certificates (such as RedHat, ORACLE, Cisco), CISSP, CCFP, CEH
<i>Most important factors for selection of partner:</i>	Entry through local/regional partners, understanding the culture
<i>Comment:</i>	Outsourcing and off-shore destination on its own

5.6. Target market: USA

<i>Openness for outsourcing or off-shore development:</i>	YES
<i>Main areas:</i>	IT help desk, Application development, IT infrastructure management, ongoing ERP maintenance
<i>Main driver:</i>	reduce costs, greater flexibility to scale operations, more effective operations globally, meet regulatory requirements, gain access to talent and new technology, transform or reengineer processes
<i>Most recognized organizational IT quality standards:</i>	CMMI, ISO9001, ISO27001, ISO22301, ISO20000, SCRUM, KanBan, ITIL
<i>Preference for verification:</i>	Certification and self-declaration
<i>Most recognized individual IT quality standards:</i>	SCRUM Master, PMP, CISSP, ITIL Expert, Technology/Vendor Specific Certificates (such as Juniper, ORACLE, Cisco, Microsoft, Alcatel), US regulatory compliance certifications
<i>Most important factors for selection of partner:</i>	Financial stability, knowledge of industry processes, proven and mature service offering, delivery excellence
<i>Comment:</i>	Necessary compliance with US regulations (privacy, security, reporting, etc.); sophisticated market

5.7. Target market: Germany

<i>Openness for outsourcing or off-shore development:</i>	YES
<i>Main areas:</i>	IT resources, software development, network engineers, Cloud computing, Software testing, Application development, infrastructure outsourcing, Telco services, IT services, maintenance
<i>Main drivers:</i>	Cost-efficiency
<i>Most recognized organizational IT quality standards:</i>	CMMI, ISO9001, ISO27001, ITIL, TOGAF, SixSigma
<i>Preference for verification:</i>	Certification and self-declaration
<i>Most recognized individual IT quality standards:</i>	SCRUM Master, PRINCE2, PMP, ITIL Expert, Six Sigma, TOGAF, Technology/Vendor Specific Certificates (such as Microsoft, ORACLE, Cisco, Huawei, SAP)
<i>Most important factors for selection of partner:</i>	Vertical expertise, technical responsiveness, onsite delivery capabilities, project management, low fluctuation of staff
<i>Comment:</i>	SME prefer local IT providers / partners, German language is necessary

6. Annexes

6.1. Annex 1: List of all interviewees

Country	Stakeholders - Interviewees			#
	Name	Organization:	Position:	
United Kingdom 	Niranjan Thiyagarajan	Frost & Sullivan	Consultant	1
	Marko Stevanovic	Corporate Project Solutions	Enterprise Project Management Consultant	2
	Milan Zivkovic	Huawei Technologies	Senior Operations Business Consultant	3
	Nik Coultas	Telefonica UK	Technical Project Manager	4
	Veronica Walker	Reward Gateway	Retail Operations Manager	5
	Vladimir Trpkovski	Deloitte UK	Manager (Data Analytics)	6
Scandinavia Sweden  Norway  Scandinavia	Goran Mladenovski	Tele2	Singleview system architect	7
	Jacob Greitz	Datanet AB	Managing Director	8
	Fredrik Syversen	IKT Norge	Coordinator	9
	Gerald Aster	Devoteam Consulting	Practice Director Consulting	10
Turkey 	Murat Yilmazsoy	Standards & Partners	Partner	11
	Burak Dalgin	Locations	Leasing Manager	12
	Fatma Karaosmanoglu	Sinpaş GYO	Architectural Project Specialist	13
	Alpay Sallacan	Coodla Information Technologies	IT Consultant - Owner	14
	Tugba Ozturk	Turkcell Global Bilgi	Information Security and Management Systems Specialist	15
Netherlands 	<u>Robbert Jongeneel</u>	<u>Acsense</u>	<u>Marketing & Sales specialist</u>	16
	Gordan Kondev	XS2theWorld	Senior Backend Developer	17
	Menno Laan	The Mobile Company	Mobile Front/Back-end Developer	18
	<u>Pilipovic Pilip</u>	A.E.T	Software engineer at AET.EUROPE B.V.	19
	Muli Paz	BELKIN	Senior IT help desk	20
	Carlos Carchi	BELKIN	Senior IT manager	21
	Svetlana Zivcevska-Zdraveska	IBM	Senior IT Service Management Consultant	22
	Tomislav Trajkovski	APPLIFY	Director	23

Country	Stakeholders - Interviewees			#
	Name	Organization:	Position:	
Middle East  Jordan  Palestine	Jawad Abbassi	Arab Advisors	Founder and General Manager	24
	Tamara Abdel Jaber	Palma Consulting	Executive Board Member	25
	Abdel Majeed Shamlawi	Int@j (IT sector association)	CEO	26
	Mohammad Tahboub	Savvytek	President	27
	Ashraf Mraybeh	Akhtaboot	Country Manager - Jordan	28
	Manal Tubeileh	STS	Director, e-Payment Solutions Delivery	29
	Samia Totah	Bisan Systems	Founder and Director	30
	Mohammad Musleh	PITA (Palestinian IT Association)	Executive Director	31
	Muhannad Hijawi	Spark Consulting	CEO	32
	Tareq Maayah	Exalt Technologies	CEO	33
Salem Awadallah	Asal Technologies	Service Delivery Director	34	
USA 	Visar Dida	InContext Solutions	Software Architect/Team Leader/Scrum master	35
	Genc Doko	SAP Labs - SMART OPS Carnegie Mellon	Team Leader - Research programmes - lecturer	36
	Ilir Zenku	University Of Illionis in Chicago - Healthcare	Assistant Vice President, HealthSystem IT	37
	Gevara Tali	TELLABS	Sr Consulting Engineer at Tellabs	38
	Betim Deva	APPLE (former NASA)	Software engineer	39
	Lulzim Gashi	SoftChoice (former ACCENTURE)	Project manager / senior network engineer	40
	Faton Aliu	PECB	President and Chief Operating Officer	41
	Sabri Tahiri	World Bank	Business Analysis Officer/Project Manager at The World Bank	42
	Kushtrim Kuqi	GoHealth	Product Owner	43
Germany 	Nikolcho Panov	Vodafone Global Services GmbH	Service Manager	44
	Ina Markova Tomova	Huawei Technologies Deutschland GmbH	Quality Manager	45
	Goran Kitanovski	Epson	Pre-sales Manager	46
	Ramesch Karutoori	Infosys	Technical Lead	47
	Andreas Hauswirth	Municipality 3 of Düsseldorf	File Clerk	48
	Ardit Nesimi	Ernst & Young	Senior Transfer Pricing Manager	49

Detailed lists of stakeholders per country is provided as *separate files*.

6.2. Annex 2: Final interview questions

Guiding questions for target market analysis

Objective: to identify the current trends in the IT industry standards, models and certification schemes required in the target markets.

- the current trends on standards and certifications for improving the quality of the companies (IT suppliers and clients) and products
- identify the current trends on standards and certifications necessary for exporting to the target markets

For IT companies:

1. Company overview: size, history, key services and products, client types, current markets, target markets?
2. What are the key products and services mostly required on target markets (as identified for this project)? (differentiate product type by market)
3. What are the current trends on standards and certifications for improving the quality of the companies (IT suppliers and clients) and products in your primary market/s?
4. What standards/practices do you currently have in place? How did you obtain them (external consulting, internal process, other donor support, etc??)
5. How important and how attractive is the process of implementation of IT standards and good practice frameworks for your company activities?
6. What are the motives for implementation of IT standards and good practice framework (internal company efficiency or external market demand)?
7. What are the relevant and recognized IT standards and good practice framework in your country/market (if necessary – see list of identified relevant standards)? Please prioritize for your primary product area and note if you have them or not.
8. How are standards and good practices implemented (by own staff, with external consulting assistance)?
9. What is your preferred process of recognition (certification) of implemented standards and good practice frameworks (self-declaration, audit by the client, independent certification)?
10. What are experienced issues/challenges/problems with implementation, maintaining and certification of relevant standards? Such as (costs, lack of access to technical services, lack of auditors, lack of understanding of the requirements of such standards, ...)

For clients (users of products/services of the IT companies):

1. Company overview: size, history, market segment, main geographical markets of operation
2. What are the key products and services you get from external IT suppliers?
3. Do you have a geographical preference for the IT suppliers?
4. Have you utilized service providers and/or product developers from the Balkan region? IF yes, for what products/services?
5. How important it is for your company that your IT suppliers have implemented relevant IT quality standards and good practice frameworks for quality of organizational and development processes and delivered IT products?

6. Are there recognized and/or required IT quality standards and good practice frameworks for providers of IT products and services? [maybe provide a list as well and then ask for others and ask them to prioritize]
 - a. Can you identify those required from each of the following and prioritize them: provider as a company, for their staff or for the product/service itself
 - b. Please name the required or recognized standards
7. What is your preferred process of verifying the implemented standards/certification and/or good practice frameworks at the IT supplier (self-declaration, your own audit of the supplier, independent external certification)
8. What is the advantage for you when using services and products from IT suppliers who have implemented relevant IT quality standards? (better quality, schedule, cost (could be higher?), ability to collaborate, etc)

For certification bodies:

1. Company overview: standards covered, main geographical markets of operation
2. What are the most sought after IT quality standards and/or good practice frameworks that you are providing certification for? (if the certification body covers several of the target markets – please ask for details per country)
3. What are the motives of your clients for implementation of IT standards and good practice framework (internal company efficiency or market demand)?
4. How are standards and good practices implemented (by company's own staff, with external consulting assistance)?
5. What is the range of costs for initial certification? What is the range of costs for continual maintenance of the certification?
6. Do you provide online register of certified companies?

For IT associations in the target markets:

1. Organization overview: history, member types, markets?
2. Are your members aware of the importance and value of implementing and practicing relevant standards and certificates?
3. What are the key products and services of your members mostly required on target markets (as identified for this project)?
4. What are the current trends on standards and certifications for improving the quality of the members?
5. How important is the process of implementation of IT standards and good practice frameworks for your members?
6. What are the motives for implementation of IT standards and good practice frameworks (internal company efficiency or market demand)?
7. What are the issues/challenges/barriers that your members are facing in deciding whether to implement IT quality standards, as well as in the process of implementation itself?
8. What are the relevant and recognized IT standards and good practice frameworks in your country/market (if necessary – see list of identified relevant standards)?
9. How are standards and good practices implemented (by own staff, with external consulting assistance)?

10. What is your preferred process of recognition (certification) of implemented standards and good practice frameworks (self-declaration, audit by the client, independent external certification)?
11. What are the assistance schemes (if any) for support of implementation of IT quality standards and good practice frameworks?

6.3. Annex 3: Completed questionnaires per country

Separate files

6.4. Annex 4: Aggregated results per country

Separate files

6.5. Annex 5: List of publications/documents for secondary research

	Name of the document:	Authors:	Period:
1.	Maturity Profile Reports	Ken Keller ; Brian Mack	March 2013
2.	IT Market Trends – Germany, Austria, Switzerland (DACH 2014)	Capgemini Consulting	April 2014
3.	IT Market Analysis – Germany	Capgemini Consulting	April 2014
4.	IT Market Analysis – The Netherlands	Capgemini Consulting	April 2014
5.	IT Market Analysis – Norway	Capgemini Consulting	April 2014
6.	IT Market Analysis – UK	Capgemini Consulting	April 2014
7.	Application Landscape Report	Capgemini Consulting	2014
8.	European e-Competence Framework 3.0	CEN (European Committee for Standardization)	2014
9.	ICT Market in Turkey: Opportunities for U.S. Exporters	US Department of Commerce	2012
10.	IT skills shortage	TechTarget	May 2014
11.	Palestinian ICT Sector 2.0: Technology Sector Development Report and Recommendations relevant to Regional and Global Market Opportunities	Solutions for Development Consulting	April 2014
12.	Project Harmonise Outcomes	CEPIS	
13.	Skill Requirements of an IT Professional in an Outsource Environment	Chuan-Hsi Chen; Jeffery Y. P. Chi; NCCU	May 2010
14.	State of the Outsourcing Industry	Phil Fersht Jamie Snowdon	2013
15.	APM group ISO/IEC Certified Organizations	http://www.isoiec20000certification.com/home/ISOCertifiedOrganizations/ISOCountryListings.aspx	current
16.	CMMI's Published Appraisal Results	https://sas.cmmiinstitute.com/PARS/pars.aspx	current
17.	ISO report on certifications per country	http://www.iso.org/	Current

6.6. Annex 6: List of identified available IT quality standards and best practices

Organization-centric standards, good practices and certifications

ISO IT standards	Website (recommended source for additional information)
ISO 9001: Quality Management System	http://en.wikipedia.org/wiki/ISO_9001#Contents_of_ISO_9001
ISO 12207: Systems and software engineering -- Software life cycle processes covers software life cycle processes	http://en.wikipedia.org/wiki/ISO_12207
ISO 15504: Process assessment, SPICE (Software Process Improvement and Capability Determination)	http://en.wikipedia.org/wiki/ISO_15504
ISO 20000: IT Service Management	http://en.wikipedia.org/wiki/ISO_20000
ISO 22301: Business continuity management systems	http://en.wikipedia.org/wiki/Disaster_recovery http://en.wikipedia.org/wiki/Business_continuity_planning
ISO 27001: Information Security Management System	http://en.wikipedia.org/wiki/ISO_27001
ISO 14000: Environmental management	http://en.wikipedia.org/wiki/ISO_14000
ISO/IEC 25010:2011 Systems and software engineering - Systems and software Quality Requirements and Evaluation (SQuaRE) - System and software quality models	http://en.wikipedia.org/wiki/ISO/IEC_9126
ISO/IEC 25030 Software engineering - Software product Quality Requirements and Evaluation (SQuaRE) - Quality requirements	http://www.iso.org/iso/catalogue_detail.htm?csnumber=35755
ISO/IEC 25040 Systems and software Quality Requirements and Evaluation (SQuaRE) - Evaluation process	http://www.iso.org/iso/catalogue_detail.htm?csnumber=35765
ISO/IEC 90003 Software Engineering. Guidelines for the Application of ISO 9001:2000 to Computer Software	http://www.iso.org/iso/catalogue_detail?csnumber=35867
Good Practice Frameworks	
ITIL (The Information Technology Infrastructure Library)	http://en.wikipedia.org/wiki/ITIL
COBIT (Control Objectives for IT)	http://en.wikipedia.org/wiki/Cobit
CMMI (Capability Maturity Model Integration) with SCAMPI - CMMI Appraisal Method for Process Improvement	http://en.wikipedia.org/wiki/CMMI
SEI PSP- Personal Software Process	http://en.wikipedia.org/wiki/Personal_software_process
SEI TSP - Team Software Process	http://en.wikipedia.org/wiki/Team_software_process
SEI CERT-RRM Resilience Management Model	http://www.cert.org/resilience/products-services/cert-rmm/cert-rmm-model.cfm
TOGAF - Open Group Standard, is a proven enterprise architecture methodology and framework	http://www.opengroup.org/togaf/
Personal software process - PSP	http://en.wikipedia.org/wiki/Personal_software_process

<p>NIST 800 group of standards</p> <ul style="list-style-type: none"> • NIST 800-12 An Introduction to Computer Security: The NIST Handbook • NIST 800-100 Information Security Handbook: A Guide for Managers • NIST 800-14 Generally Accepted Principles and Practices for Securing Information Technology Systems • NIST 800-122 Guide to Protecting the Confidentiality of Personally Identifiable Information (PII) • NIST 800-47 Security Guide for Interconnecting Information Technology Systems 	<p>http://en.wikipedia.org/wiki/National_Institute_of_Standards_and_Technology</p>
<p>PCI DSS - Payment Card Industry Data Security Standard</p>	<p>https://www.pcisecuritystandards.org/training/isa_training.php</p>
<p>HIPPA - Health Insurance Portability and Accountability Act</p>	<p>http://www.hipaatraining.com/</p>
<p>HL7 - Health Level Seven International</p>	<p>https://www.hl7.org/implement/standards/</p>
<p>Other standards and methodologies</p>	
<p>TickITplus</p>	<p>http://en.wikipedia.org/wiki/TickIT</p>
<p>KanBan for software development</p>	<p>http://en.wikipedia.org/wiki/Kanban_(development)</p>
<p>ITMark</p>	<p>http://it-mark.eu/</p>
<p>SCRUM</p>	<p>http://en.wikipedia.org/wiki/Scrum_(software_development)</p>
<p>Extreme programming - XP</p>	<p>http://en.wikipedia.org/wiki/Extreme_Programming</p>
<p>Lean Six Sigma</p>	<p>http://en.wikipedia.org/wiki/Lean_Six_Sigma</p>
<p>Dynamic systems development method</p>	<p>http://en.wikipedia.org/wiki/Dynamic_Systems_Development_Method</p>
<p>Lean software development - LSD</p>	<p>http://en.wikipedia.org/wiki/Lean_software_development</p>
<p>Adaptive Software Development - ASD</p>	<p>http://en.wikipedia.org/wiki/Adaptive_Software_Development</p>
<p>IEEE software standards:</p> <ul style="list-style-type: none"> • IEEE 610—Defines standard software engineering terminology. • IEEE 829—Establishes standards for software test documentation. • IEEE 830—Explains the content of good software requirements specifications. • IEEE 1074—Describes the activities performed as part of a software life cycle without requiring a specific life cycle model. • IEEE 1298—Details the components of a software quality management system. • 1061-1998 - IEEE Standard for a Software Quality Metrics Methodology 	<p>http://en.wikipedia.org/wiki/IEEE_Standards_Association</p>
<p>European e-Competence Framework</p>	<p>http://www.ecompetences.eu/</p>

Product – centric certifications

- European Privacy Seal <https://www.european-privacy-seal.eu/>

Individual / professional – centric certifications

- Certified Software Development
http://en.wikipedia.org/wiki/Certified_Software_Development_Professional
- Various (ISC)² professional certifications -
[http://en.wikipedia.org/wiki/\(ISC\)%C2%B2#Professional_Certifications](http://en.wikipedia.org/wiki/(ISC)%C2%B2#Professional_Certifications)
 - Certified Information Systems Security Professional (CISSP)
 - Certified Secure Software Lifecycle Professional (CSSLP)
 - Certified Authorization Professional (CAP)
 - Systems Security Certified Practitioner (SSCP)
 - Certified Cyber Forensics Professional (CCFP)
- Various ISACA professional certifications - <http://en.wikipedia.org/wiki/ISACA#Certifications>
 - Certified Information Systems Auditor (CISA)
 - Certified Information Security Manager (CISM)
 - Certified in the Governance of Enterprise IT (CGEIT)
 - Certified in Risk and Information Systems Control (CRISC)
- PMP: Project Management Professional -
http://en.wikipedia.org/wiki/Project_Management_Professional
- ITIL v3 – http://en.wikipedia.org/wiki/Information_Technology_Infrastructure_Library
- Various ORACLE professional certifications
http://en.wikipedia.org/wiki/Oracle_Certification_Program
- Various IBM Professional Certifications <http://www-03.ibm.com/certify/certs/index.shtml>
- Various Microsoft professional certifications
http://en.wikipedia.org/wiki/Microsoft_Certified_Professional
- Various SAP Professional Certifications
<http://www.sap.com/training-education/certification/about.html>
- Various Cisco Professional Certifications
<http://www.cisco.com/web/learning/certifications/index.html>
- VCP-DV: VMware Certified Professional Datacenter Virtualization
<http://mylearn.vmware.com/portals/certification/>
- CNE: Certified Novell Engineer <http://www.novell.com/training/certinfo/>
- CCA: Citrix Certified Administrator - <http://training.citrix.com/cms/education/certification/>
- General IT technology professional certification
[http://en.wikipedia.org/wiki/Professional_certification_\(computer_technology\)](http://en.wikipedia.org/wiki/Professional_certification_(computer_technology))
- Certified Ethical Hacker
http://en.wikipedia.org/wiki/Certified_Ethical_Hacker
- Red Hat Certification Program
http://en.wikipedia.org/wiki/Red_hat_certification
- Various CompTIA certifications
<http://en.wikipedia.org/wiki/CompTIA>
 - Network+
 - Security+
 - Cloud Essentials
- Various GIAC Certifications
http://en.wikipedia.org/wiki/Global_Information_Assurance_Certification
 - Security Administration
 - Forensics
 - Management
 - Software Security
 - Legal
 - GSE
- Certified Business Resilience Manager <http://www.brcci.org/cbrm.htm>
- Cyber risk certified <http://www.watsec.com/Cyber-Risk-Certification.htm>