

Improving Quality of Software Processes in Turkey

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Abstract

Having an idea of a young country, tends to develop and improve rapidly in IT sector. With rapid growth rate in the sector putting quality in minds is something very important to reach country wide strategic goals in IT sector. Before it's too late making a common sense of quality in IT Sector is very important. Information about Spice and CMM, how to utilize those models, pitfalls, expectations and profits.

Keywords

Software Quality in Turkey, ISO 15504, SPICE, CMMI, IT Business in Turkey, Subventions and Regulations for IT Sector in Turkey, Turkish People, Interest of IT, Medium-Term And Long Term Goals Of Turkey, Improvement of IT Sector in Turkey.

Introduction

In recent years, in rapidly growing Turkish economy, IT Sector is becoming increasingly important. Communication, construction, automotive, transportation, heavy industry, and textile industries are such large sectors and have been the locomotive of Turkey and contributing for the rapid growth of Turkish economy recent years. In those widespread sectors, quality in every meaning and customer satisfaction is understood very well during last 20 years. Because of young educated population, steady and reliable circumstances via strong politics, rising purchase power, foreign and domestic investment etc... Turkey is a great market alone.

Turkish People

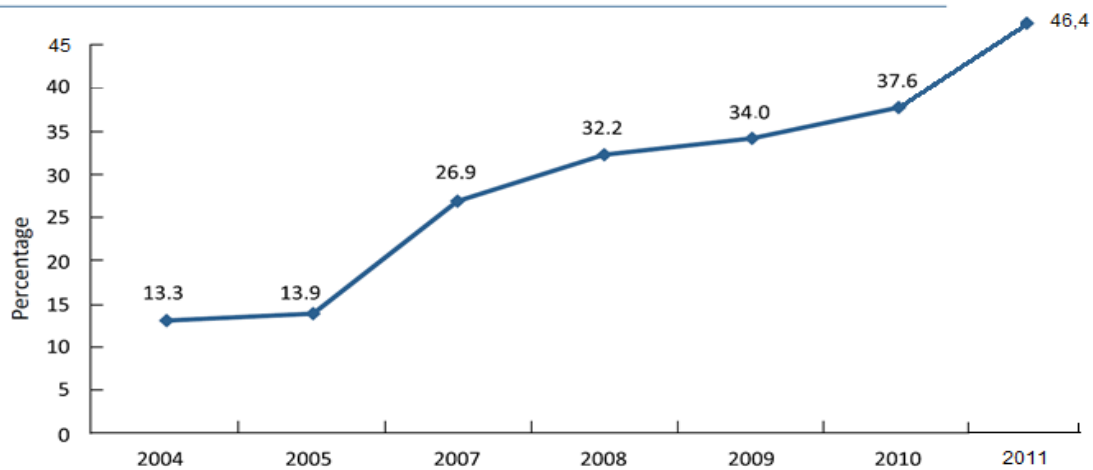
As of December 31, 2011 Turkey's population is 74,724,269 people. Turkey is a young populated country with median age is about 28.5 now and around %74 of total population age is below 45 . In Turkey percentage of using computer is %46,4 as of July,2011. Below 45 years old people percentage is more than %60 and percentage is trending upward rapidly as you see the table below.

Son üç ay içinde bireylerin yaş grubuna göre bilgisayar ve İnternet kullanım oranları (%)
Individuals using the computer and Internet in the last 3 months by age groups (%)

	Yıl Year	Yaş grubu - Age group																	
		16 - 24			25 - 34			35 - 44			45 - 54			55 - 64			65 - 74		
		Toplam Total	Erkek Male	Kadın Female	Toplam Total	Erkek Male	Kadın Female	Toplam Total	Erkek Male	Kadın Female	Toplam Total	Erkek Male	Kadın Female	Toplam Total	Erkek Male	Kadın Female	Toplam Total	Erkek Male	Kadın Female
Bilgisayar Computer	2004	-	44,4	21,1	-	26,4	13,1	-	19,2	7,1	-	12,9	2,8	-	4,0	0,7	-	0,8	0,1
	2005	-	43,8	25,0	-	27,6	13,9	-	19,2	7,1	-	14,2	3,3	-	5,0	1,2	-	2,2	0,2
	2007	54,6	67,3	40,7	35,1	44,7	25,5	26,8	36,6	17,1	17,1	26,8	7,5	6,0	9,6	2,0	1,5	2,2	0,6
	2008	57,9	69,6	47,0	43,3	54,8	31,8	31,6	41,6	21,5	20,4	28,3	12,5	7,4	12,6	2,5	1,8	3,0	0,9
	2009	62,2	76,4	49,1	46,6	58,6	34,5	31,8	42,1	21,3	20,2	28,9	11,6	6,7	10,6	3,1	2,2	3,2	1,4
	2010	65,2	78,5	52,7	52,0	62,4	41,6	36,9	46,9	26,9	23,2	33,6	12,7	8,3	13,5	3,4	2,7	4,1	1,6
	2011	67,7	77,9	58,3	57,1	67,5	46,7	41,7	52,6	30,6	24,1	34,3	13,9	11,2	17,2	5,4	3,0	5,0	1,4
İnternet Internet	2004	-	38,3	15,9	-	21,5	9,9	-	13,9	4,9	-	9,3	1,7	-	2,7	0,6	-	0,9	0,1
	2005	-	37,4	18,8	-	22,5	10,6	-	14,3	5,0	-	10,1	2,4	-	3,8	0,9	-	1,8	0,1
	2007	50,4	63,5	36,2	32,3	41,5	23,1	23,8	33,2	14,4	14,8	23,2	6,5	4,8	7,5	1,8	1,4	2,1	0,6
	2008	54,8	67,1	43,4	41,4	52,3	30,4	29,3	37,7	20,8	19,4	27,1	11,6	6,9	11,9	2,2	1,6	2,5	0,9
	2009	59,4	74,1	46,0	45,1	57,2	32,9	30,2	40,3	19,9	18,6	26,7	10,5	6,2	9,5	3,1	2,0	3,1	1,2
	2010	62,9	76,6	49,9	50,6	60,9	40,2	34,7	43,5	25,7	22,4	31,9	12,9	7,8	12,6	3,2	2,7	4,2	1,6
	2011	65,8	76,5	55,9	55,1	65,4	44,9	39,7	50,4	28,9	22,7	32,1	13,2	10,4	16,0	5,0	2,7	4,5	1,2

Hanehalkı Bilişim Teknolojileri Kullanım Araştırması Sonuçları, 2004-2011 - Results of the ICT Usage in Households and by individuals, 2004-2011

Figure 1.1: Computer Usage within the Last 3 Months



IT Sector is Growing

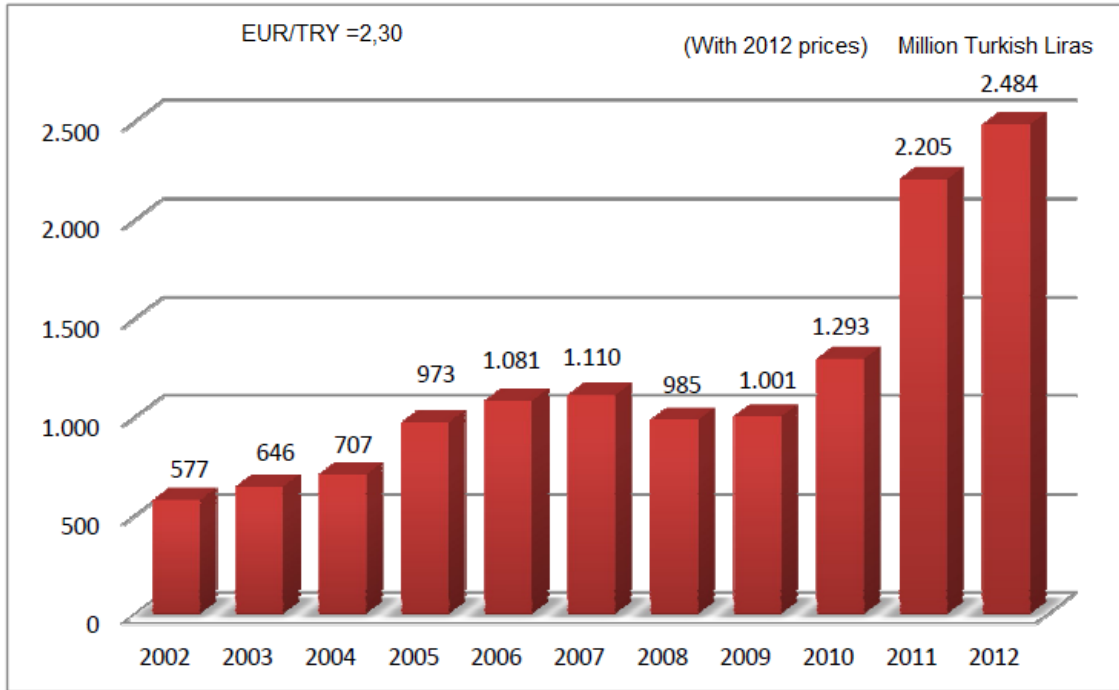
Because of being a great market new investment projects have great possibility to survive by using quality tools. By the web technologies and decent competition, customers have options and have their own purchasing criteria.

New circumstances makes it obligation to reach customers rapidly and to be reachable easily and safely, to product fast and consistent service and products more automation is used in production like factories, services like hospitals. In government area large government software projects are being developed. Now many government services are being emerged under www.turkiye.gov.tr . Goal of this project is to make possible for all citizens to reach government services on one web site safely and easily. Last few years government institutions are collaborating by using some common services or sharing their databases for integrity and consistency.

In those conditions developing many different kind of software projects for every sector and every case is becoming so vital. Recent days many software projects in government are in use and many projects are ongoing and still under development and many projects are planned for future. Some of old fashioned projects are needed to be replaced with new open and flexible projects.

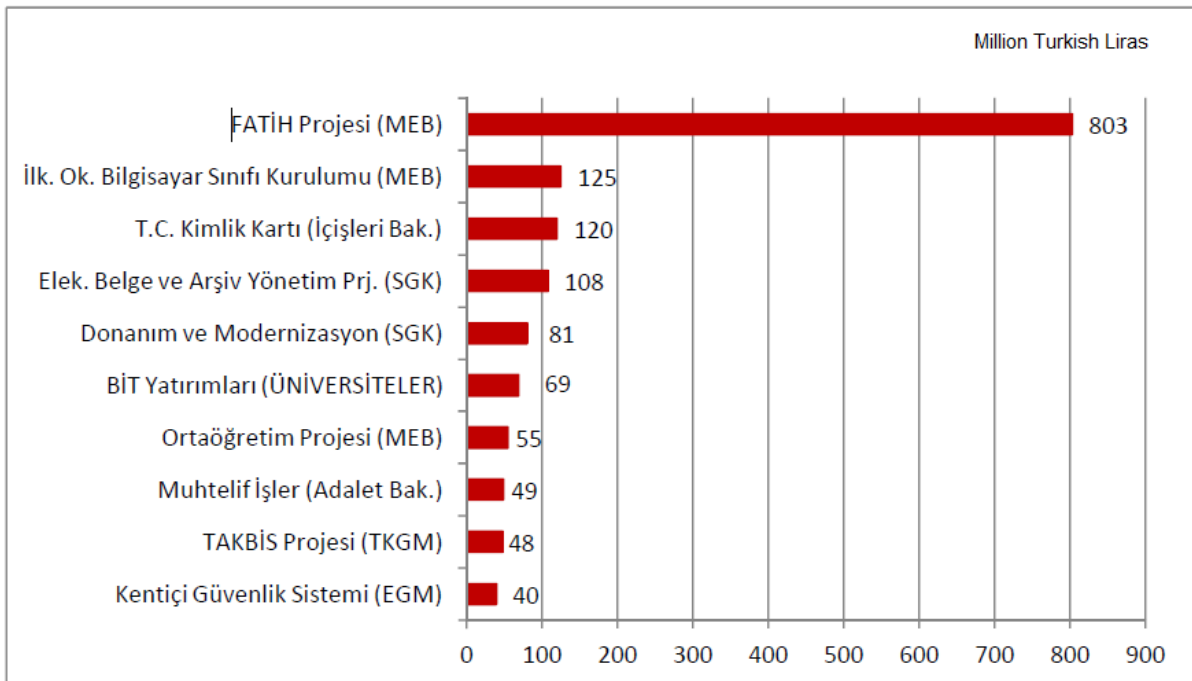
Government Investments in IT Technologies

As you can see from the graphic, total amount of Government IT investments is raising every year. This year total amount for IT project investments will reach 2,484 million TRY (around 1080 million EUR, Apr 2012).



Amount Of Investments per year 2002-2012

At second graphic you can see top ten projects according to amount of investments this year.



Amount of per Government IT Project in 2012, Top 10 Projects

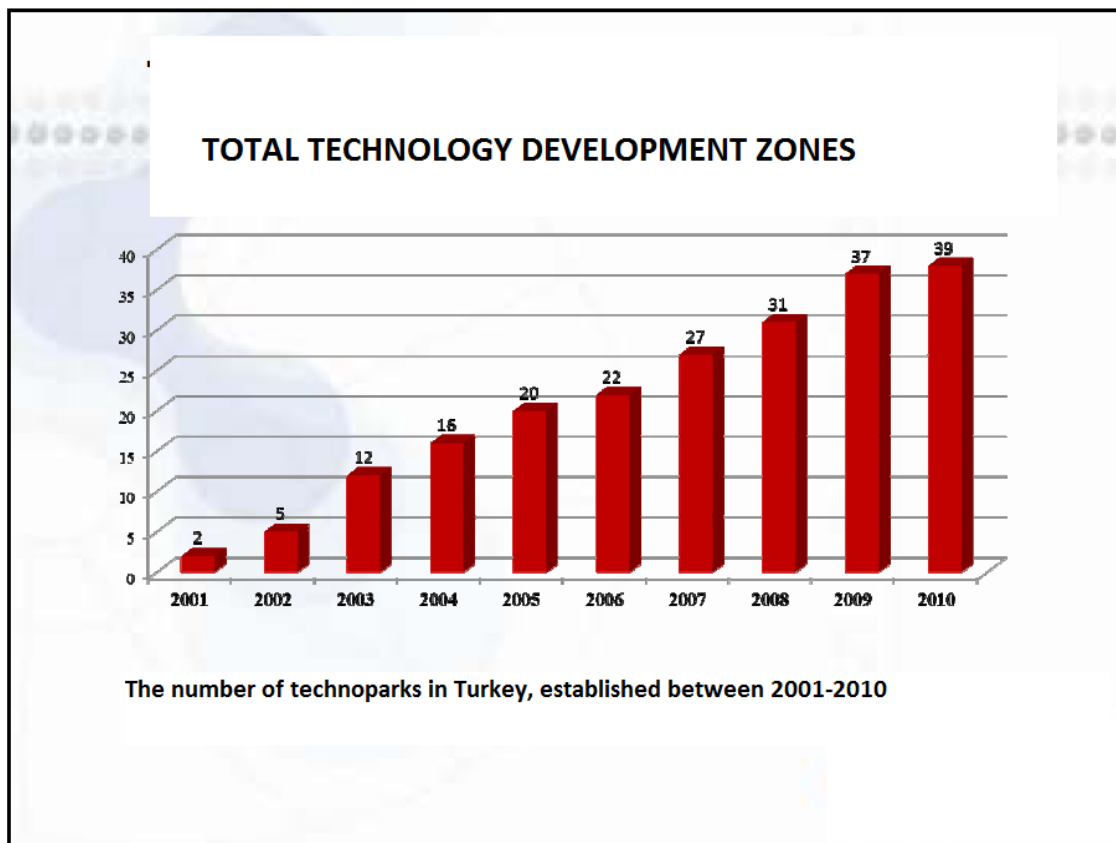
Technology Parks in Development

Technology parks are being established generally in University campus areas or independent areas. Idea of technopark concept began in 90s. In time, number of technoparks raised and size of technoparks enlarged. With leadership of universities, Ministry of Science, Industry and Technology made some regulations. In this scope, Law of Technology Development Zones (Turkish Law No: 4691) was published in 2001. So technoparks found a legal base. After 2001, 39 technoparks were established in Turkey.

By the Law 4691, the companies active in technoparks are excluded from income taxes and corporation taxes for the software and research and development activities. %50 of employees insurance payment is excluded. For the software developed by technopark companies V.A.T. is excluded.

Technopark statistics in Turkey

- [Number Of Companies](#) 1451
- [Number of Employees](#) 12743
- [Total Export](#) 540 million USD



Quality is Important

In the long run some of IT companies in Turkey went a few steps more than the rest those already realized importance of quality, productivity, flexibility, transparency, customer satisfaction, innovation, proactive protection against errors which could cause to decrease customer faith. For those companies rapid growth was inevitable.

Unlike widespread sectors such as communication, construction, automotive, transportation, heavy industry, and textile industries etc. in IT sector, meaning of quality's positive effects are being understood in wide was something not very common, by manufacturer side and government side who determines regulations.

Recently in Turkey two companies have SPICE certificate those are Level-1 and Level-2 and nearly 20 companies CMMI certificate. Those companies who qualified for SPICE certification telling that they are really satisfied and even saw better reactions than expected. I

Regulations Become Opportunities

Government of Turkey also realized the growth of software sector in government and private sectors. So government made obligatory to comply with number of standards for bidder companies.

For government side, in "Ministry of Development, Strategy of Information Society - Action Plan" job sharing for IT projects and gave responsibilities for special branches in IT sector country-wide development. Those branches are in main titles:

- [Social Transformation](#)
- [Effects of IT on Business World](#)
- [Modernization in Public Administration](#)
- [Citizen Oriented Service Transformation](#)
- [Worldwide-Competitive IT Sector](#)
- [Competitive, Widespread and Cheap Communication Infrastructure and Services](#)
- [Research and Development and Innovation](#)

Under those 7 branches there are 111 sub branches and few actions for each sub branches those shared by different government institutions.

In the "Preparing Government Information and Communication Technologies Projects Guideline, 2010" which belongs to "Ministry of Development, Information society Department" says:

"In this context, for 2011-2013 period, it's obligatory to comply with CMM-I Level-2 certification of quality (SPICE level-2, AQAP 160) for new IT projects which will be included in the investment program or which has not been yet tender that includes application software development component, estimated project amount of ₺5,000,000 and above or equivalent. For those, project amount below ₺5,000,000 it's required to apply TS ISO 12207 Software Life Cycle Standard."

Subventions

Beside those regulations there are also subventions for new investments, research and development projects. KOSGEB (Small and Medium Enterprises Development Organization of Turkey) has some options for new investors and investors who have new ideas, R&D projects. Total amount of subventions could be up to ₺750 000.

There are also Development Agencies in Turkey, and those agencies are working for different parts of Turkey. The goals of those agencies are supporting regional development of Turkey by supporting investments, new projects, consulting companies, making the region attractive for investments, supporting to create manpower for investments, improving the coordination between government, civil society organizations and private sector.

Percentage of subventions for industrial companies up to %40 of total cost, for government and civil society organization subvention is up to %75 of of total cost of the projects. (See some samples here: www.cka.org.tr/flipbook/CKA_MALIDESTEK/index.html)

Turkish Standard Institution (TSE)

TSE was established in 1954 within the Turkish Union of Chambers of Industry and Commerce and of Commodity Exchanges. TSE formally became an independent agency in 1960 under the Law 132.

TSE is a full member of International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), and affiliate member of European Committee for Standardization (CEN) and European Committee for Electrotechnical Standardization (CENELEC). TSE is also a member of World Packaging Organization (WPO) and is a signatory to the Code of Good Practice contained in the World Trade Organization (WTO) Agreement on Technical Barriers to Trade and acts as the National Enquiry Point in connection with standards under the said Agreement. TSE also actively follows the quality efforts in Europe. As a member of the European Organization for Quality (EOQ) since 1976, TSE now holds the position of EOQ Vice-President.

Certification of IT Products within TSE

We have total 12 provisional assessors working for TSE in Product Certification Department, Personnel and System Certification and IT Department. Under Product Certification Department TSE has IT Certification Unit, certificating according to standards below:

- [SPICE \(TS ISO/IEC 15504\)](#)
- [Systems and software engineering -- Software life cycle processes \(ISO/IEC 12207\)](#)
- [Common Criteria: Information technology -- Security techniques -- Evaluation criteria for IT security \(TS ISO/IEC 15408\)](#)
- [Document Management Standard \(TS 13298\)](#)
- [Software engineering -- Software product Quality Requirements and Evaluation \(SQuaRE\) -- Requirements for quality of Commercial Off-The-Shelf \(COTS\) software product and instructions for testing \(TS ISO IEC 25051\)](#)
- [Ergonomics of human-system interaction -- Part 151: Guidance on World Wide Web user interfaces \(ISO 9241-151\)](#)
- [Information technology -- Security techniques -- Security requirements for cryptographic modules \(ISO/IEC 19790\)](#)
- [Information technology - Security techniques - Test requirements for cryptographic modules \(TS ISO/IEC 24759\)](#)

- [Systems engineering - System life cycle processes \(TS ISO/IEC 15288\)](#)

SPICE Conference in Turkey

Probably 21. Annual EuroSPI (**E**uropean **S**ystem, **S**oftware & **S**ervice **P**rocess **I**mprovement & **I**nnovation) Conference will be in Turkey for 2014. This important conference will cause a great reaction from Turkish Government and Turkish software companies and SPICE standards will be understood very well. More subvention and regulation for SPICE standards can be granted particularly after this conference and companies can be attracted to have SPICE certification. After this conference number of SPICE certificated companies will raise and by certificated companies a software quality improvement mentality will place clearly in country wide. Finally, this mentality will help Turkey to reach one of very important goal defined in country strategy in medium-term and long-term.

LITERATURE

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* DEVLET PLANLAMA TEŞKİLATI MÜSTEŞARLIĞI

Bilgi Toplumu Dairesi Başkanlığı

Kamu Bilgi ve İletişim Teknolojileri Projeleri Hazırlama Kılavuzu

* Bilgi Toplumu stratejisi : Eylem Planı (2006-2010)

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Graduated from Computer Engineering Program at Selçuk University in 2008. Started working at IT Department of Culture and Tourism Ministry of Turkey in Jan 2009. Then transferred to IT Department of State Supply Office. Now working for TSE since October 2010 and still going on Production Management Master Program at Gazi University in Ankara.