SPICE Assessments for IT Service Management according to ISO/IEC 20000-1

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Abstract

The scope of ISO/IEC 15504 addresses “process assessments for improvement and capability determination”; it is not limited to software engineering processes! Other best practice models for IT like ITIL® and ISO/IEC 20000 for IT Service Management or the ISO/IEC 27000-Series for Information Security Management do not provide such a concise approach for process improvement. So ISO/IEC 15504 can be used as universal model for process assessment and process improvement.

Following this idea I have defined an “ISO 20000 – PAM”, a process assessment model for IT Service Management according to ISO/IEC 2000-1:2005. Based on the ISO 20000 – PAM we have implemented an Assessment Tool for IT Service Management: SPICE 1-2-1 for ISO 20000.

This paper describes the development of the “ISO 20000 – PAM”, the Assessment Tool “SPICE 1-2-1 for ISO 20000” and first experiences of their application in my consulting work.

Keywords

- IT Service Management
- ITIL
- ISO 20000
- Process Assessment
- SPICE / ISO 15504

1 Motivation

The international standard ISO/IEC 15504 is called “Information technology – process assessment”. The scope of ISO 15504 addresses “process assessments for improvement and capability determination”. This means, that the scope of ISO 15504 is not limited to software engineering processes! It can be applied to other process areas too! E.g. to IT Service Management according to ISO 20000[1] or to Information Security Management according to ISO 27000ff.

[1] ISO/IEC 20000 is the ISO-Standard for IT Service Management following the ITIL® approach.

This open scope of ISO 15504 inspired me to develop an SPICE-based integrated and uniform approach for process improvement for IT organizations. I called this approach “assessment based process improvement”. It is based on:

1.) The SPICE assessment approach as defined in ISO 15504-2

2.) International and industry standards for the different process domains:

- For software engineering:
  ISO/IEC 12207 as process reference model and ISO/IEC 15504-5 as process assessment model
- For IT Service Management
  ITIL as best practice model and ISO/IEC 20000-1 as standard for certification.
- For Information security management:
  ISO/IEC 27001:2005 as standard for certification and ISO 17799 (will be reissued as ISO/IEC 27002) as standard for information security controls.
- For IT Governance:
  Cobit as accounting standard for IT governance and as industry standard to implement SOX[2].

Following this approach my partners and I have developed an “ISO 20000 – PAM”, a process assessment model for IT Service Management according to ISO 20000-1:2005

2 The ISO 20000 – PAM

The “ISO 20000 - PAM” is a Process Reference and Assessment Model

- according to ISO/IEC 15504-2:2003 (Assessment Approach & Capability Model)
- for IT Service Management Processes according to ISO/IEC 20000-1:2005.

For the development of the “ISO 20000 - PAM” the ISO/IEC 15504-2:2003 provides

- the requirements for a Process Reference Model
- the requirements for a Process Assessment Model
- the Capability Model and the rating scale

ISO/IEC 20000-1:2005 provides the requirements for an IT Service Management System. The ISO/IEC 20000-1 promotes the adoption of an integrated process approach to effectively deliver managed services to meet the business and customer requirements.

ISO/IEC 15504-5:2006 provides the assessment indicators for the capability model (capability indicators).

The processes and their performance indicators described in the “ISO 20000 – PAM” shall be necessary and sufficient to achieve the corresponding requirements of ISO/IEC 20000-1:2005 regarding a service management system and its service management processes. The authors have implemented all ISO 20000-1 require-

[2] The Sarbanes-Oxley Act (SOX) governs the responsibility and accountability of management and CPA (Certified Public Accountant) for the completeness and correctness of the financial reporting

ments as “base practices”. So an organization’s IT service management system which fulfils all base practices shall be compliant to ISO 20000-1.

Developing the Process Reference Model

An ISO 15504 conformant Process Reference Model describes its processes in Terms of “Purpose” and “Outcomes”. ISO/IEC 20000-1 is structured in chapters, which can be interpreted as process groups (first level headlines from chapter 3 to chapter 10) and processes (second level headlines from chapter 3.1 to chapter 10.1); ISO/IEC 20000-1 describes these processes in terms of “Objectives” and required activities and results. The objective-statement can be used as purpose-statement; the required activities and results can be translated into outcomes.

Developing the Process Assessment Model (performance indicators)

An ISO 15504 conformant Process Assessment Model describes performance indicators for capability level 1 in terms of base practices and work products.

The activities required by ISO/IEC 20000-1 can be interpreted as base practices; the work products can be derived from the required results. At the moment the ISO 20000 – PAM only uses base practices as performance indicators; it is planned to add work products as additional performance indicators for one of the the next versions.

The Capability Dimension

The Capability Dimension is not described in the ISO 20000-PAM – it is referred.

For the ISO 15504 compliant Process Assessment Model the Capability Dimension is provided by the ISO 15504:

- The measurement framework for process capability is defined in ISO 15504-2:2003 in Chapter 5.
- The process capability indicators are defined in ISO 15504-5:2006 - chapter 6.

For other purposed the capability dimension and the process capability indicators can be replaced; they can be taken e.g. by:

- SPICE Lite: Capability Levels CL 1 to CL5 and their corresponding capability level indicators.
- CMMI: Capability Levels CL 1 to CL5 and their corresponding capability level indicators.

Strictly speaking this would lead to different ISO 20000-PAMs using these different Capability Models.

In practice it seems much more convenient to the authors to speak from one ISO 20000 - PAM describing the process dimension and referring to the different capability models which can be used.

3 The Assessment Tool: SPICE 1-2-1 for ISO 20000

The “ISO 20000 – PAM” was basis for the Assessment Tool “SPICE 121 for ISO 20000” which has been distributed to the first customers in the 4. quarter of 2006. Also the first assessments have been performed in the 4. quarter of 2006 to evaluate

and rate IT service management processes like “incident management” or “problem management”.

SPICE 1-2-1 for ISO 20000 is based on the well-tried SPICE 1-2-1 Assessment Software (see → www.spice121.com); it supports the a typically assessment process in 4 steps:

- Assessment Planning (Prepare):
  Select the processes and the maximum capability level to assess.
- On-site-Assessment (Fill-in):
  Rate the processes and fill in the rating and the findings (assessment notes)
- Analysis of Assessment Results (Analyze):
  Analyze the assessment results using the SPICE 1-2-1 charts.
- Assessment Report Generation (Reports):
  Generate automated reports for MS-Word, Powerpoint or HTML-format.

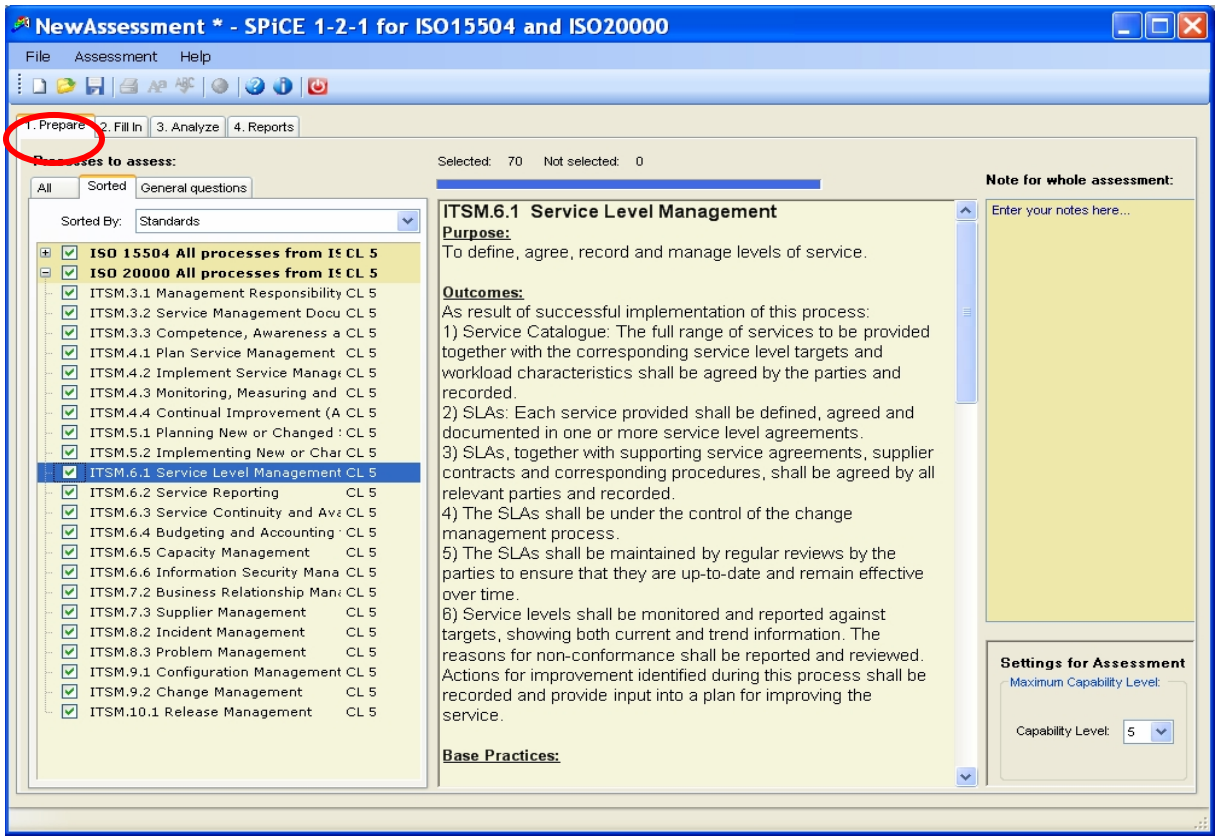
SPICE 1-2-1 for ISO 20000 is available in two variants:

- “SPICE 1-2-1 for ISO 20000”:
  The questionnaire covers all processes/requirements of ISO/IEC 20000-1:2005
- “SPICE 1-2-1 for ISO 15504 and ISO 20000”:
  The questionnaire covers both standards: ISO/IEC 15504-5:2006 and ISO/IEC 20000-1:2005. This version is thought for computing centers with relevant software development and for software product companies, who want to provide professional services for their customers. It also can be used as basis for an integrated assessment tool for an integrated process management system. Therefore organization specific processes can be added.

For further information see → www.spice4iso20000.com

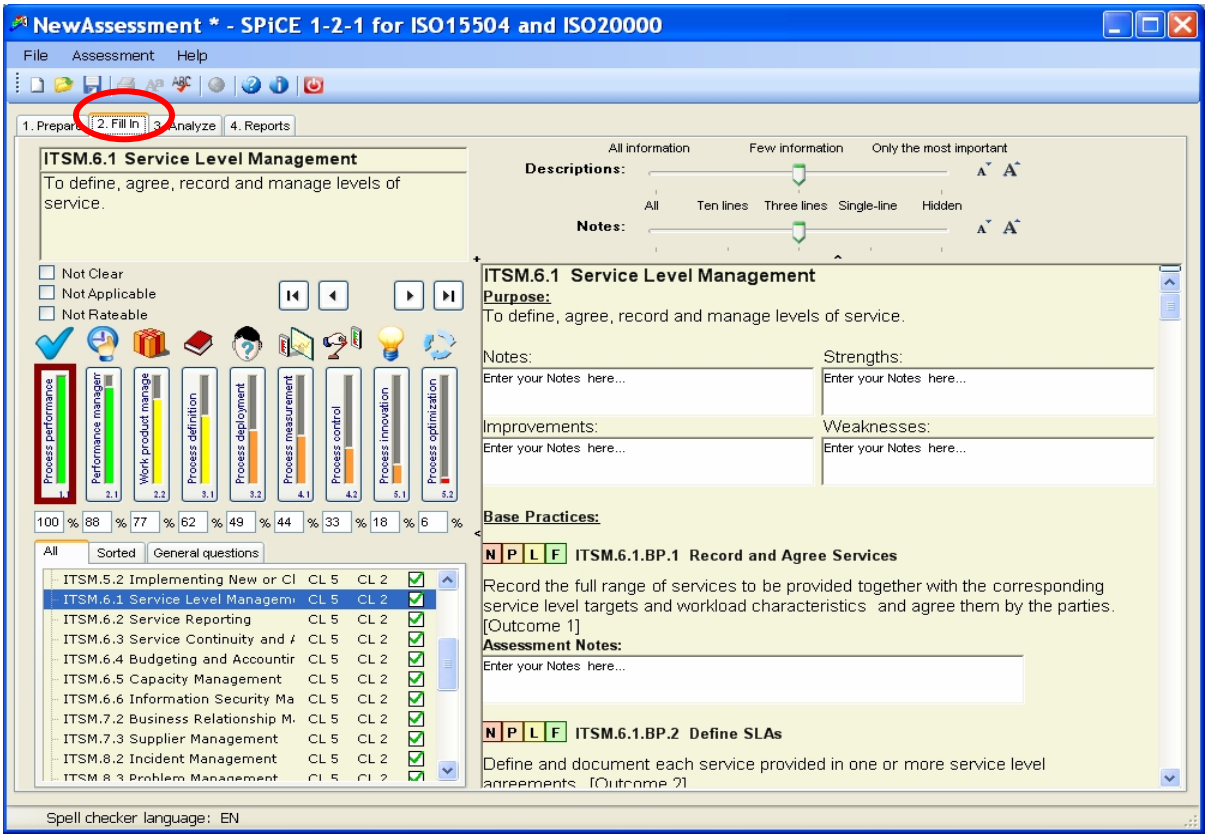
Prepare:

Select the processes and the maximum capability level to assess.



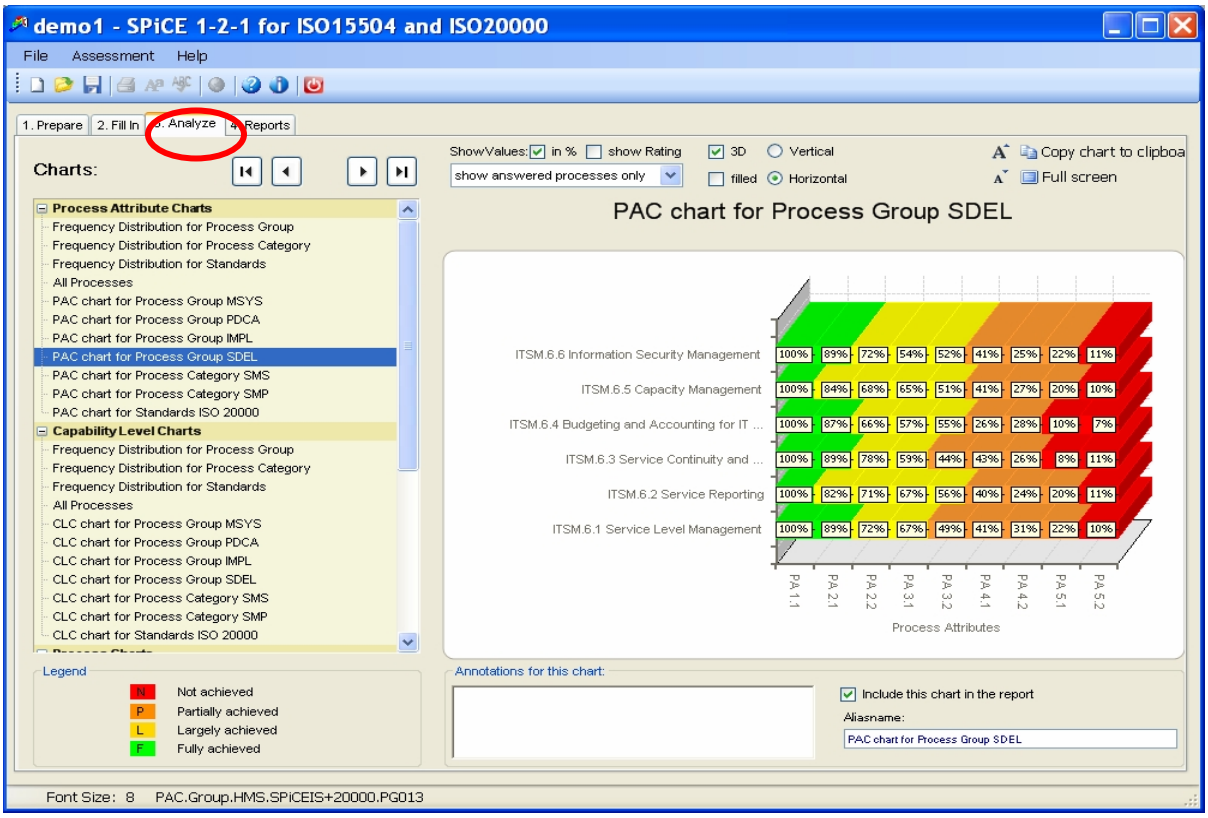
Fill-in:

Rate the processes and fill in the rating and the findings (assessment notes)



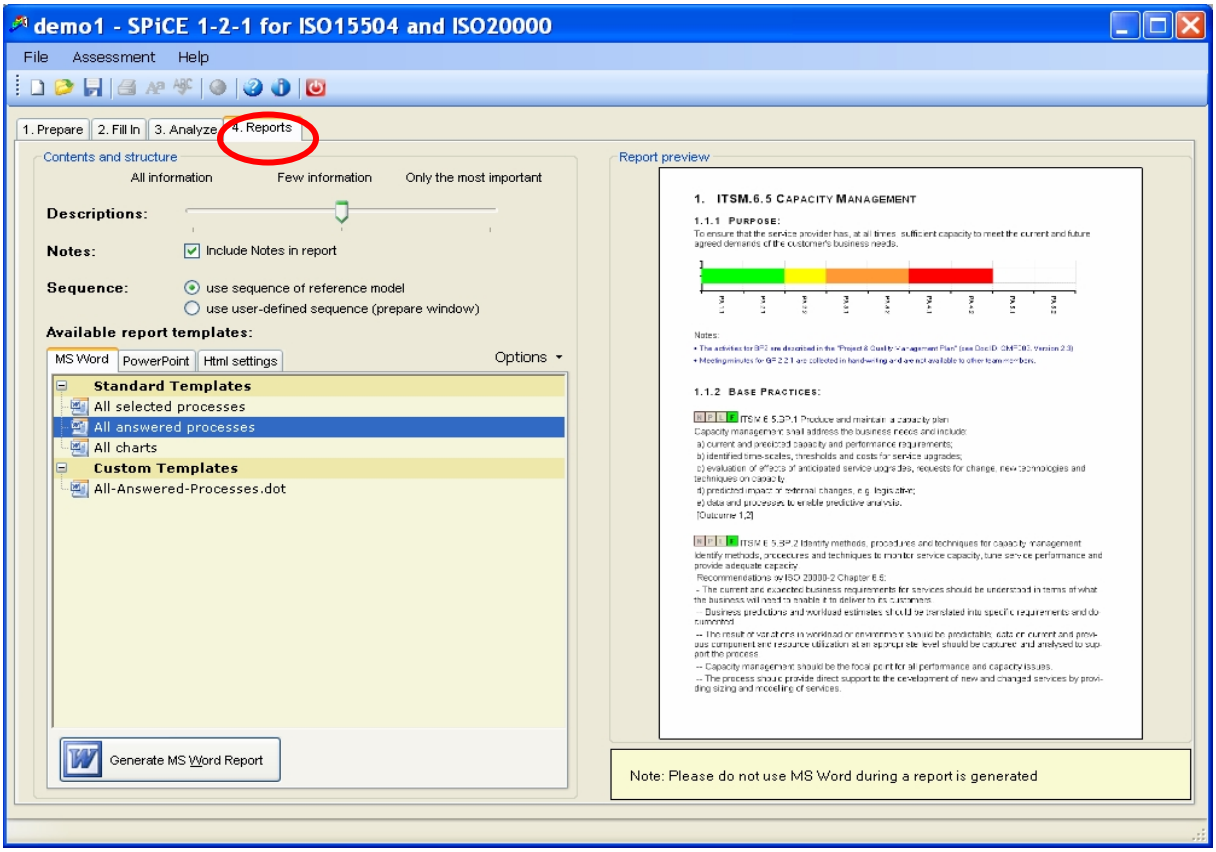
Analyze:

Analyze the assessment results using the SPICE 1-2-1 charts.



Reports:

Generate automated reports for MS-Word, PowerPoint or in HTML-format.



Reference customers:

SPICE 121 for ISO 20000 has been purchased by the following IT-organizations within the last six months:

- BAWAG-PSK (Vienna): the number 4 banking company in Austria.
- IT-Austria (Vienna): The computing centre for the two leading banking companies in Austria: BA-CA Group and Erste Bank Group
- HVB Information Services (Munich)
- Baxter AG (Vienna): Pharmaceutical industry
- BRZ GmbH. (Vienna): The computing centre for the Austrian governmental administration.

4 First experiences

The ISO 20000 – PAM has proved as practicable

The transformation of the ISO 20000-1 requirements into "purpose and outcome" and corresponding "base practices" as assessment indicators has proved as practicable. On the other hand the base-practice structure has shown where the ISO 20000-1 requirements are not precise. In some of these cases the "ISO/IEC 20000-2 Information technology — Service Management — Part 2: Code of practice" can help. But the code of practice takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.
We have got the feedback, that structuring the ISO 20000-1 requirements into "base practices" makes the ISO 20000-1 more readable and easier to understand for the target audience.

This SPICE assessments have proved as helpful for capability determination and improvement of IT service management processes → positive feedback of the assessed organizations.

Synergies between ISO20000 and ISO 15504:

We have seen, that parts of the ISO 15504-5 can be reasonably applied to organizations which want to implement IT Service Management processes according to ITIL ® or ISO/IEC 20000-1:

ISO 20000 Processes	Corresponding Processes in ISO 15504-5
➢ Chapter 3: Requirements for a Service Management System and ➢ Chapter 4: Planning and Implementing Service Mangement	➢ MAN – Management Process Group ➢ RIN – Resource and Infrastructure Process Group ➢ PIM – Process Improvement process Group
➢ Chapter 7.2 Business Relationship Management	➢ SPL – Supply Process Group
➢ Chapter 7.3 Supplier Management	➢ ACQ – Acquisition Process Group

In all these cases the ISO 15504-5 Process Assessment Model provides substantial support to implement the ISO 20000 requirements. The SPICE processes and base practices are elaborated in more detail; this can help to understand how the the ISO 20000 requirements can be reasonably implemented.

In other cases both models provide similar processes seen from two different points of view, e.g.:

ISO 20000 Processes	Corresponding Processes in ISO 15504-5
➢ Chapter 8: Resolution Processes 8.2 Incident Management 8.3 Problem Management	➢ SUP 9: Problem Resolution Management ➢ SUP 10: Change Request Management

Emerging Interest in the process capability approach

We notice a substantial interest to apply process capability approaches (CMMI and SPICE) to IT Service Management (especially by companies which deal with CMMI or SPICE for software engineering processes anyway). If there is a business case we will implement an Assessment Tool “CMM-Quest for ISO 20000” which shall combine the ISO 20000 – PAM (processes and performance indicators) with the CMMI capability dimension.

We also notice a substantial interest to apply the SPICE capability approach to organization wide process management initiatives, which cover not only IT processes.

5 Outlook / forecast:

In the next step we want to apply this approach to Information Security Management according to ISO/IEC 27001 and/or to IT Governance according to Cobit.

- The structure of the ISO/IEC 27001 is similar to the ISO/IEC 20000-1.
- The Cobit Control Objectives can be interpreted as “processes” and Cobit controls can be interpreted as “practices”

So we can support our customers with an SPICE based integrated approach for IT process management.

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- ISO/IEC 27001:2005: Information technology – security techniques – Information security management systems – Requirements
- Cobit 4.0: Control Objectives, Management guidelines, Maturity Model IT Governance Institute; 2005; www.itgi.org

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- Consultant for IT & Software Process Improvement (SPI);
  Nehfort IT-Consulting → www.nehfort.at (since 1986)
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- *it*smf certified ISO 20000 consultant
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- 1978: start of my professional career as Software-Developer;
- 1975 – 1979: Study of Technical Mathematics at the Technical University of Vienna – certificate Dipl.Ing. (DI.)