
Overview

This sub-discipline covers the competencies required by an information technology and/or telecoms organisation to ensure that appropriate software development processes are being applied in any assignments.

A software process improvement ethos expects individuals proactively to identify opportunities to improve the efficiency and effectiveness of the methods and practices for software development in use. Equally, it involves the IT/technology organisation as a whole embracing a culture of continuous improvement (CI) in its software development processes. This is sometimes referred to as a *software improvement process* (SIP) approach.

Procom does not advocate any particular software development methodology. These choices are for individual organisations to make. However, it is accepted that there are a range of methodologies available, that not all may be suitable for every particular assignment and that the characteristics of these methodologies vary, in some cases considerably, from each other. In order to approach software improvement sensibly, it is important to understand the relative merits and potential risks associated with the various methods so that appropriate improvement approaches can be adopted so as to suit the needs of the organisation.

Software process improvement approaches also vary considerably across cultures and organisations. Some organisations prefer to adopt a wide ranging, structured programme of improvement across the enterprise, linked to benchmarks, industry frameworks and received wisdom. Others may prefer to adopt a more informal approach, wherein each individual seeks to find and adopt improvements in their local working arrangements.

Performance criteria

You must be able to:

Assist in the assessment of current software activities and their deliverables

- P1 Follow the strategy, policies, plans and standards relating to software process improvement activities
- P2 Correctly use/apply the processes, procedures, methods, tools and techniques applicable to software process improvement activities and their deliverables
- P3 Accurately monitor and measure the effectiveness of current software development activities and practices in own area of accountability, under the direction of superiors
- P4 Accurately source, gather and collate information and data from monitoring software development activities and practices
- P5 Critically analyse information and data relating to software development activities and practices, under the direction of superiors
- P6 Correctly use/apply metrics and other benchmarks, as appropriate to assess software development activities and practices
- P7 Assist others with the identification of issues with the current software development processes and practices
- P8 Use and apply lessons learned from previous assignments

Assist in the identification of software process improvements

You must be able to:

- P9 Provide information and data from the analysis of software development activities and practices to superiors, as required
- P10 Assist in the identification of opportunities for improvements to the software development process in use by a range of IT/technology individuals and teams
- P11 Assist in the selection of suitable, alternative software approaches appropriate to the needs of individual assignments and/or business functions/areas
- P12 Assist in the development of plans to implement alternative software approaches
- P13 Assist in providing support, advice and guidance to individual as to how they might improve the quality and effectiveness of software development activities and practices in use within their own area of accountability
- P14 Present a justification on cost, quality or time basis of proposed improvements

Assist with communication during software improvement activities, under the direction of superiors

You must be able to:

- P15 Assist with the presentation of findings from the assessment of current software development processes and practices
- P16 Assist with the communication of the implications of and benefits/opportunities associated with software process improvement to a wide range of individuals within the organisation, as directed by superiors
- P17 Assist with the identification of training and development needs for individuals who will need to adopt/use new software development methods and approaches
- P18 Assist with the education and training of individuals and teams in

software improvement processes, procedures, methods, tools and techniques

Knowledge and understanding

Assist in the assessment of current software activities and their deliverables

You need to know and understand:

- K1 The range of internal and external factors that may impact on the efficiency and effectiveness of any software development processes used
- K2 The importance of continuously assessing software development processes and adapting them to the changing needs of the business
- K3 The value of monitoring and measuring software development processes as part of assessing opportunities for improvement
- K4 The importance of having clearly documented processes and procedures as part of any activity to improve software development processes
- K5 The importance of verifying the accuracy, currency, completeness and relevance of information and data collected from software development processes
- K6 What is meant by terms such as 'waterfall', 'lean', 'agile', 'scrum' and 'up/rup' software methodologies
- K7 The appropriateness and effectiveness of a range of software development methodologies in a variety of it/business contexts
- K8 What software development processes and practices are currently in use within the IT/technology organisation
- K9 What are the industry standards, models and frameworks for software maturity and effectiveness that can be used to assist with software process improvement activities
- K10 What are the relevant criteria and standards to use when monitoring the effectiveness of software development activities
- K11 How to verify all information and data collected from software development activities
- K12 How to critically interpret information and data collated from software development activities in order to inform software improvement activities

Assist in the identification of software process improvements

You need to know and understand:

- K13 How software improvement activities relate to the systems lifecycle
- K14 The potential benefits to an organisation from software process improvement activities
- K15 The fact that there are industry standards, models and frameworks for software maturity and effectiveness that can be used to assist with software process improvement activities
- K16 The internal and external factors that may impact on the effectiveness of software processes used on any particular assignment and/or in any particular business context
- K17 The importance of all individuals being responsible for improving the quality and effectiveness of software development processes in use within their own area of accountability
- K18 The importance of identifying cost/benefit for improvements
- K19 'lean', 'agile', 'scrum' and 'UP/RUP' and other non traditional software methodologies
- K20 the industry standards, models and frameworks for software maturity and

effectiveness that can be used to assist with software process improvement activities

- K21 How to analyse information and data relating to current software processes and practices
- K22 How to use and apply relevant expertise, knowledge and resources to identify suitable, alternative software approaches
- K23 How to correctly identify the benefits and disadvantages of particular software development methods in a range of IT/technology contexts
- K24 How to plan and implement software process improvement activities

Assist with communication during software improvement activities, under the direction of superiors

You need to know and understand:

- K25 The importance of education, training and development in the effective implementation of software improvement activities
- K26 The importance of communicating the benefits of software improvement processes to a wide range of individuals within the it/technology organisation
- K27 The fact that the adoption of non traditional software methodologies may require individuals to learn a range of new behaviours, roles and working practices
- K28 Accurately gather, source and collate information and data relating to the skills and experience of current software development practitioners
- K29 Critically analyse information and data relating to the skills and experience of current software development practitioners
- K30 Accurately identify what education and training may be required by individual practitioners in order to adopt new/alternative software development methods
- K31 Present clear and specific information and data relating to the benefits/opportunities to the IT/technology organisation associated with software improvement processes

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