
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:

Select software process improvements, under the direction of superiors

- P1 Correctly identify and select the processes, procedures, methods, tools and techniques applicable to software process improvement activities and their deliverables
- P2 Correctly source metrics and other benchmarks, as appropriate that may be used to assess current software development activities and their deliverables
- P3 Critically analyse the findings from the analysis of current software development activities, accurately identifying issues for resolution
- P4 Correctly identify and critically assess possible alternative approaches to software development that may be considered and which may address issues arising from current practices
- P5 Select appropriate alternative software development methods to meet the business needs

Manage software process improvement activities

You must be able to:

- P6 Accurately monitor and measure the quality and effectiveness of current software development activities
- P7 Proactively identify opportunities to improve current software development activities and their deliverables in a range of IT/technology contexts
- P8 Critically review the findings from monitoring software development improvement activities
- P9 Implement authorised plans to improve the quality and effectiveness of software development activities and their deliverables within selected IT/technology contexts
- P10 Accurately identify barriers to the adoption of software development improvements
- P11 Identify what training and development is required in order for software development improvement practices to become more effective
- P12 Implement and maintain education and training for individuals and teams in software development improvement processes, procedures, methods, tools and techniques

Manage the quality and effectiveness of software improvement activities

You must be able to:

- P13 Select appropriate approaches to software process improvement that may be tested/trialled/used within selected IT/technology contexts
- P14 Test/trial approaches in order to confirm their suitability in any particular IT/technology context
- P15 Accurately monitor and measure the implementation of software process improvements, reporting progress to superiors
- P16 Critically analyse the findings from monitoring software process improvement activities
- P17 Recommend actions that may be taken in the event of software process improvement activities not delivering to their expected results

Communicate software process improvement activities to a range of

individuals, teams and other bodies

- You must be able to:*
- P18 Effectively communicate the importance of continuous improvement in software development activities to a wide range of individuals and teams within the IT/technology organisation
 - P19 Clearly communicate the benefits associate with software development improvement practices to a wide range of internal and external individuals, teams, sponsors
 - P20 Present specific proposals, targets and plans associated with software process improvement activities to a wide range of internal and external sponsors and stakeholders
 - P21 Communicate the improvements that have been achieved in software development activities and the benefits associated with these improvements to a wide range of sponsors, stakeholders and other internal and external bodies and individuals

Knowledge and understanding

You need to know and understand:

Select software process improvements, under the direction of superiors

- K1 The need to analyse a range of software processes, roles, responsibilities, practices and structures used in order to identify potential improvements
- K2 The fact that certain traditional software development methodologies place stronger emphasis on formal phases, documentation, structure and process whilst others focus on informality, collaboration, feedback, iterative design review , minimised 'waste and wait time' and rapid working results
- K3 The potential implications of 'lean' 'agile' , 'scrum' and 'up/rup' and other non traditional software methodologies for traditional software development environments, organisations and individuals
- K4 The cultural landscape of the it/technology organisation and the impact of this on any software process improvement approach adopted
- K5 What are the internal and external factors that may impact on the use/adoption of any particular software improvement approach
- K6 What are the current software processes, roles, responsibilities, practices and structures in use
- K7 The implications of using 'lean' 'agile' , 'scrum' and 'up/rup' and other non traditional software methodologies in own it/technology organisation and business environment
- K8 The appropriateness of a range of alternative software methodologies in a range of business and it/technology situations
- K9 How to source relevant expertise, knowledge and resources to identify suitable, alternative software development approaches
- K10 How to develop effective plans for the implementation of software process improvement activities
- K11 How to select the most appropriate approaches to adopt as means to improve software

Manage software process improvement activities

You need to know and understand:

- K12 The fact that there will be barriers to adoption of new/alternative software development processes with many individuals and teams
- K13 The role and value of education and training in improving the skills and abilities of software developers to make effective use of software improvement methods
- K14 The importance of influencing individuals to adopt new software processes and methods
- K15 Who are the individuals who may need to be influenced in order to support the adoption of new /alternative software processes and methods
- K16 Who are the individuals and teams who need to be educated and trained in order to maximise the impact of software process improvement activities
- K17 How to implement, maintain, use and apply the processes, procedures, methods, tools and techniques to monitor the alignment of account

management activities and their deliverables with any relevant legislation, regulation, internal and external standards, strategy, policies, and plans

- K18 How to train and educate individuals and teams in selected software improvement processes, procedures, methods, tools and techniques

Manage the quality and effectiveness of software improvement activities

You need to know and understand:

- K19 The fact that the quality and effectiveness of software development can have a significant impact on the credibility and brand of the IT/technology organisation
- K20 The importance of software improvement activities delivering tangible business benefit
- K21 The range of approaches that can be taken to software development improvement work and their relevance and appropriateness in a variety of business contexts
- K22 The fact that improvements to software processes should be a continuous activity for IT/technology organizations
- K23 The fact that some improvements to software processes sometimes require long lead times for benefits to be realised
- K24 What are the standards and targets that have been set for software development activities within the IT/technology organisation
- K25 How to implement, maintain, use and apply the processes, procedures, methods, tools and techniques for software process improvement
- K26 How to interpret the results provided by monitoring and measuring software process improvement activities
- K27 How to make recommendations on actions to be taken to resolve issues experience during measuring software process improvement activities

Communicate software process improvement activities to a range of individuals, teams and other bodies

You need to know and understand:

- K28 The fact that software process improvement activities are often difficult to implement and that awareness of the challenges associated with them is critical to success
- K29 The importance of software improvement activities delivering real business benefit
- K30 The importance of communicating the need to continuously improve software development processes to a wide range of sponsors, stakeholders and other individuals and teams
- K31 The fact that potential changes to current software development processes and practices, and the implications of these changes can be a source of significant concern to individuals and teams
- K32 The particular issues and challenges faced by individuals and teams within IT/technology organisations as a result of software process improvement activities
- K33 How to communicate empathetically with a wide range of individuals and teams
- K34 manage the expectations of a wide range of sponsors and stakeholders of software improvement activities

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