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.

**Level 3 competencies**

**Recognise the usage of a range of software methods and approaches, under the direction of superiors** 5063.01

**Performance Criteria** 5063.01C

a) Correctly follow the software development methodologies that are in use within own area of work

b) Adapt own behaviour as appropriate to the needs of the software development methodology in use for any particular assignment

c) Accurately source and gather information and data about the characteristics benefits and potential risks of each type of software development methodology in use

d) Correctly identify and select appropriate software development methodologies that may be considered for a range of business assignments

e) Critically analyse own area of work accurately reporting opportunities for potential improvements in the software process used for a particular assignment to superiors

f) Accurately document own development needs in respect of software development methods

**Knowledge** 5063.01K

a) how to use apply and analyse information and data in order to identify opportunities for improvement
   - how to operate in accordance with any codes of conduct and organisational standards that apply to software improvement activities

b) the software development methodologies that are in use within own area of work

c) why the software development methodologies that are in use within own area of work were selected

d) which software development methodologies are being used for any particular business assignments and the rationale for their selection

e) when/whom to ask for support in order to perform in line with the software development process in use within own area of work

f) how to seek advice and guidance from others in order to ensure effective participation in any particular software development assignment using specific processes

g) how to identify select use and apply the correct behaviours processes procedures methods tools and techniques required to align with any particular software development methodology in use

h) how to operate with reference to organisational strategy policies and standards in software improvement processes

i) how to gather information and data during software development activities in order to inform software improvement activities

**Understanding** 5063.01U

a) what is meant by software engineering

b) what is meant by a software development methodology

c) what is meant by a software improvement process (SIP)

d) what is meant by continuous improvement (CI)

f) the importance of efficiency and effectiveness in any software development process

g) the importance of continuous improvement in any software development process
h) the fact that there are ongoing opportunities to improve the efficiency and effectiveness of any process used to develop software
i) the fact that improvements to any IT/technology process used may have beneficial impacts on the quality of IT systems services and assets delivered by an IT/technology organisation
j) what is the range of software development methodologies that may be used and their core characteristics
k) the potential benefits and risks associated with any particular software development methodology

**Level 4 competencies**

**Assist in the assessment of current software activities and their deliverables 5064.01**

**Performance Criteria 5064.01C**

a) Follow the strategy policies plans and standards relating to software process improvement activities
b) Correctly use/apply the processes procedures methods tools and techniques applicable to software process improvement activities and their deliverables
c) Accurately monitor and measure the effectiveness of current software development activities and practices in own area of accountability under the direction of superiors
d) Accurately source gather and collate information and data from monitoring software development activities and practices
e) Critically analyse information and data relating to software development activities and practices under the direction of superiors
f) Correctly use/apply metrics and other benchmarks as appropriate to assess software development activities and practices
g) Assist others with the identification of issues with the current software development processes and practices
h) Use and apply lessons learned from previous assignments

**Knowledge 5064.01K**

a) what software development processes and practices are currently in use within the IT/technology organisation
b) what are the industry standards models and frameworks for software maturity and effectiveness that can be used to assist with software process improvement activities
c) what are the relevant criteria and standards to use when monitoring the effectiveness of software development activities
d) how to verify all information and data collected from software development activities
e) how to critically interpret information and data collated from software development activities in order to inform software improvement activities

**Understanding 5064.01U**

a) the range of internal and external factors that may impact on the efficiency and effectiveness of any software development processes used
b) the importance of continuously assessing software development processes and adapting them to the changing needs of the business
c) the value of monitoring and measuring software development processes as part of assessing opportunities for improvement
d) the importance of having clearly documented processes and procedures as part of any activity to improve software development processes
e) the importance of verifying the accuracy currency completeness and relevance of information and data collected from software development processes
f) what is meant by terms such as 'waterfall' 'lean' 'agile' 'scrum' and 'UP/RUP' software methodologies
g) the appropriateness and effectiveness of a range of software development methodologies in a variety of IT/business contexts

**Assist in the identification of software process improvements 5064.02**

**Performance Criteria 5064.02C**

a) Provide information and data from the analysis of software development activities and practices to superiors as required
b) Assist in the identification of opportunities for improvements to the software development process in use by a range of IT/technology individuals and teams
c) Assist in the selection of suitable alternative software approaches appropriate to the needs of individual assignments and/or business functions/areas

d) Assist in the development of plans to implement alternative software approaches

e) 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

f) Present a justification on cost quality or time basis of proposed improvements

Knowledge 5064.02K

a) 'lean' 'agile' 'scrum' and 'UP/RUP' and other non traditional software methodologies

b) the industry standards models and frameworks for software maturity and effectiveness that can be used to assist with software process improvement activities

c) how to analyse information and data relating to current software processes and practices

d) how to use and apply relevant expertise knowledge and resources to identify suitable alternative software approaches

e) how to correctly identify the benefits and disadvantages of particular software development methods in a range of IT/technology contexts

f) how to plan and implement software process improvement activities

Understanding 5064.02U

a) how software improvement activities relate to the systems lifecycle

b) the potential benefits to an organisation from software process improvement activities

c) 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

d) 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

e) 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

f) the importance of identifying cost/benefit for improvements

Assist with communication during software improvement activities, under the direction of superiors 5064.03

Performance Criteria 5064.03C

a) Assist with the presentation of findings from the assessment of current software development processes and practices

b) 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

c) Assist with the identification of training and development needs for individuals who will need to adopt/use new software development methods and approaches

d) Assist with the education and training of individuals and teams in software improvement processes procedures methods tools and techniques

Knowledge 5064.03K

a) how to accurately gather source and collate information and data relating to the skills and experience of current software development practitioners

b) how to critically analyse information and data relating to the skills and experience of current software development practitioners

c) how to accurately identify what education and training may be required by individual practitioners in order to adopt new/alternative software development methods

d) how to present clear and specific information and data relating to the benefits/ opportunities to the IT/technology organisation associated with software improvement processes

Understanding 5064.03U
a) the importance of education training and development in the effective implementation of software improvement activities
b) the importance of communicating the benefits of software improvement processes to a wide range of individuals within the IT/technology organisation
c) the fact that the adoption of non traditional software methodologies may require individuals to learn a range of new behaviours roles and working practices

Level 5 competencies

Select software process improvements, under the direction of superiors 5065.01

**Performance Criteria 5065.01C**

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

**Knowledge 5065.01K**

a) what are the internal and external factors that may impact on the use/adoption of any particular software improvement approach
b) what are the current software processes roles responsibilities practices and structures in use
c) the implications of using ‘lean’ ‘agile’ ‘scrum’ and ‘UP/RUP’ and other non traditional software methodologies in own IT/technology organisation and business environment
d) the appropriateness of a range of alternative software methodologies in a range of business and IT/technology situations
e) how to source relevant expertise knowledge and resources to identify suitable alternative software development approaches
f) how to develop effective plans for the implementation of software process improvement activities
g) how to select the most appropriate approaches to adopt as means to improve software development activities

**Understanding 5065.01U**

a) the need to analyse a range of software processes roles responsibilities practices and structures used in order to identify potential improvements
b) 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
c) the potential implications of ‘lean’ ‘agile’ ‘scrum’ and ‘UP/RUP’ and other non traditional software methodologies for traditional software development environments organisations and individuals
d) the cultural landscape of the IT/technology organisation and the impact of this on any software process improvement approach adopted

Manage software process improvement activities 5065.02

**Performance Criteria 5065.02C**

a) Accurately monitor and measure the quality and effectiveness of current software development activities
b) Proactively identify opportunities to improve current software development activities and their deliverables in a range of IT/technology contexts
c) Critically review the findings from monitoring software development improvement activities
d) Implement authorised plans to improve the quality and effectiveness of software development activities and their deliverables within selected IT/technology contexts
e) Accurately identify barriers to the adoption of software development improvements
f) Identify what training and development is required in order for software development improvement practices to become more effective
g) Implement and maintain education and training for individuals and teams in software development improvement processes, procedures, methods, tools, and techniques.

Knowledge 5065.02K

a) who are the individuals who may need to be influenced in order to support the adoption of new/alternative software processes and methods.

b) who are the individuals and teams who need to be educated and trained in order to maximise the impact of software process improvement activities.

c) 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.

d) how to train and educate individuals and teams in selected software improvement processes, procedures, methods, tools, and techniques.

Understanding 5065.02U

a) the importance of influencing individuals to adopt new software processes and methods.

b) 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.

c) the need for training and education to support the adoption of new software development processes.

Manage the quality and effectiveness of software improvement activities 5065.03

Performance Criteria 5065.03C

a) Select appropriate approaches to software process improvement that may be tested/trialled/used within selected IT/technology contexts.

b) Test/trial approaches in order to confirm their suitability in any particular IT/technology context.

c) Accurately monitor and measure the implementation of software process improvements, reporting progress to superiors.

d) Critically analyse the findings from monitoring software process improvement activities.

e) Recommend actions that may be taken in the event of software process improvement activities not delivering to their expected results.

Knowledge 5065.03K

a) what are the standards and targets that have been set for software development activities within the IT/technology organisation.

b) how to implement, maintain, use, and apply the processes, procedures, methods, tools, and techniques for software process improvement.

c) how to interpret the results provided by monitoring and measuring software process improvement activities.

d) how to make recommendations on actions to be taken to resolve issues experienced during measuring software process improvement activities.

Understanding 5065.03U

a) the significance of software development activities and their impact on the credibility and brand of the IT/technology organisation.

b) the importance of software improvement activities delivering tangible business benefit.

c) the range of approaches that can be taken to software development improvement work and their relevance and appropriateness in a variety of business contexts.

d) the need for improvements to software processes to be continuous for IT/technology organisations.

e) the fact that some improvements to software processes sometimes require long lead times for benefits to be realised.

Communicate software process improvement activities to a range of individuals, teams and other bodies 5065.04

Performance Criteria 5065.04C

Effectively communicate the importance of continuous improvement in software development activities to a wide range of individuals and teams within the...
a) IT/technology organisation

b) Clearly communicate the benefits associated with software development improvement practices to a wide range of internal and external individuals, teams, sponsors, and stakeholders.

c) Present specific proposals, targets, and plans associated with software process improvement activities to a wide range of internal and external sponsors and stakeholders.

d) 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 5065.04K**

a) the particular issues and challenges faced by individuals and teams within IT/technology organisations as a result of software process improvement activities.

b) how to communicate empathetically with a wide range of individuals and teams.

c) how to manage the expectations of a wide range of sponsors and stakeholders of software improvement activities.

**Understanding 5065.04U**

a) 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.

b) the importance of software improvement activities delivering real business benefit.

c) the importance of communicating the need to continuously improve software development processes to a wide range of sponsors, stakeholders, and other individuals and teams.

d) 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.

**Level 6 competencies**

**Direct and lead software improvement programmes 5066.01**

**Performance Criteria 5066.01C**

a) Design, implement, and maintain effective strategy policies, plans, and standards relating to software development improvement activities and their deliverables.

b) Critically review recommendations made by others to improve software development activities and their deliverables within areas of the IT/technology organisation.

c) Make decisions on the priorities and plans for software process improvement programmes across the IT/technology organisation, applying relevant knowledge, experience, information, and data as appropriate.

d) Authorise appropriate plans for all aspects of software process improvement activities and their deliverables within the IT/technology organisation.

e) Authorise the use of selected approaches to software process improvement that may be trialled/used within the IT/technology organisation.

f) Design, education, and training for individuals and teams in software process improvement processes, procedures, methods, tools, and techniques.

g) Direct and lead software process improvement programmes across the IT/technology organisation, monitoring and reporting progress to superiors.
Knowledge 5066.01K

a) who are the sponsors stakeholders for software process improvement activities
b) best practice in software improvement activities
c) what are the lessons learned from prior software process improvement activities
d) how to implement and maintain the processes procedures methods tools and techniques relating to software improvement activities and their deliverables
e) how to design implement and maintain software process improvement programmes across the IT/technology organisation
f) how to benchmark the IT/technology organisation’s software maturity against external/industry standards
g) how to apply lessons learned from prior software process improvement activities
h) how to proactively identify where current software development activities are not supporting the business needs

Understanding 5066.01U

a) the importance of aligning software process improvement activities and deliverables with the IT/technology strategy and the ethos and values of the IT/technology organisation
b) the expectations and needs of the business in respect of software development processes
c) the importance of identifying where current software development activities are not supporting the business needs
d) the importance of applying change management principles and approaches to any software process improvement programme

Manage and direct communications relating to software improvement programmes 5066.02

Performance Criteria 5066.02C

a) Proactively engage the support of sponsors and stakeholders within the wider business for software process improvement activities
b) Clearly communicate the strategy and vision plans standards targets for software development activities within the IT/technology organisation to a wide range of sponsors stakeholders and other internal/external individuals and bodies
c) Provide proactive advice and guidance to sponsors stakeholders individuals teams and other bodies on all aspects of software process improvement activities and programmes
d) Report regularly on the progress and business impact of software process improvement activities and programmes to a wide range of sponsors stakeholders and other internal/external individuals and bodies
e) Communicate the outcomes of software process improvement activities and programmes and their relevance to the targets and standards for software development processes within the IT/technology organisation to a wide range of sponsors stakeholders and other internal/external individuals and bodies

Knowledge 5066.02K

a) change management principles and approaches
b) the business requirements from software process improvement programmes
c) how to clearly communicate the range of software process improvement activities underway within the IT/technology organisation reporting on their impact and effectiveness
d) how to clearly articulate the lessons learned from software process improvement activities to a wide range of sponsors stakeholders and other individuals and teams

Understanding 5066.02U

a) the importance of communicating the standards and targets that have been established for software development processes within the IT/technology organisation
b) the importance of clearly acknowledging and communicating where software development processes do not meet business needs