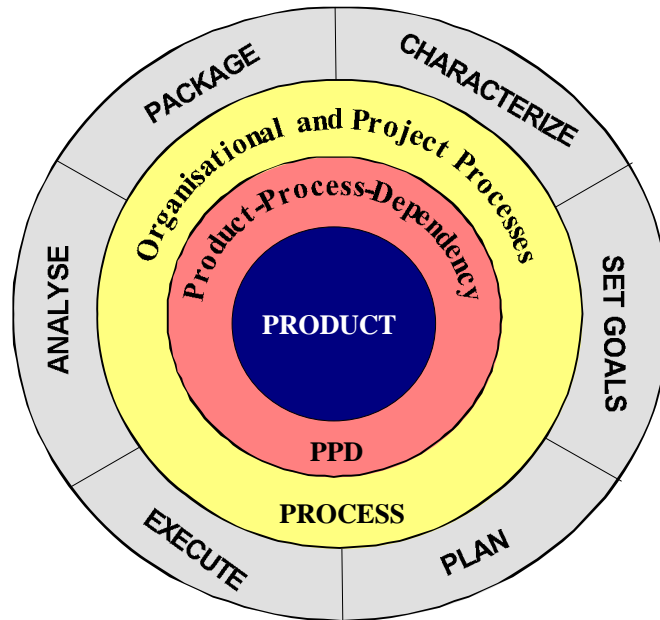


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The PROFES improvement cycle

PROFES PHASES	PROFES STEPS
CHARACTERIZE	1. VERIFY COMMITMENT
	2. IDENTIFY PRODUCT QUALITY NEEDS
	3. DETERMINE CURRENT PRODUCT QUALITY
	4. DETERMINE CURRENT PROCESS CAPABILITY
SET GOALS	5. SET PRODUCT IMPROVEMENT GOALS
	6. DETERMINE NECESSARY PROCESS CHANGES
PLAN	7. DESCRIBE PROCESS CHANGES
	8. SET METRICS FOR THE PROCESSES AND PRODUCT
	9. PREPARE IMPROVEMENT IMPLEMENTATION
EXECUTE	10. IMPLEMENT AND MONITOR IMPROVEMENTS
ANALYSE	11. EVALUATE RESULTS
PACKAGE	12. UPDATE EXPERIENCE BASE

Phases and steps of the PROFES improvement methodology



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Step 1 Verify commitment	
Goals	Activities
<ul style="list-style-type: none"> The organization's business needs and improvement objectives for product and process quality are identified. Product quality characteristics, ongoing improvement initiatives, and their priorities are identified. Commitment of top and middle management is verified. Commitment of project members is verified. Contextual info of the organization & projects is defined. An overall plan for improvement activities is defined. 	<ul style="list-style-type: none"> Identify the organization's business needs and improvement objectives Motivate top and middle management Motivate project members Define organizational context Define overall plan and schedule
Input	Output
Organizational level: <ul style="list-style-type: none"> General organizational information Business goals Customer survey results Market research results Customer feedback Organizational context information Project level: <ul style="list-style-type: none"> Project environment specifics Product development goals 	Organizational level: <ul style="list-style-type: none"> Commitment of top and middle management Preliminary product and process improvement needs Organization's classification Overall improvement plan Project level: <ul style="list-style-type: none"> Commitment of project management and members Project classification Overall improvement plan

Step 2 Identify product quality needs	
Goals	Activities
<ul style="list-style-type: none"> Product quality needs are known and presented in the form of a product quality profile Preliminary product quality goals are set 	<ul style="list-style-type: none"> Survey product quality needs Document product quality needs Set preliminary product quality goals
Input	Output
<ul style="list-style-type: none"> Customer survey results Market research results Customer feedback Business goals ISO9126 Preliminary product quality needs 	<ul style="list-style-type: none"> Product quality needs Product quality profile Preliminary product quality goals

Step 3 Determine current product quality	
Goals	Activities
<ul style="list-style-type: none"> Determine current status of product quality 	<ul style="list-style-type: none"> Acquire product quality data Evaluate current status of product quality
Input	Output
<ul style="list-style-type: none"> Application domain characteristics Measurement data ISO9126 Product quality profile Experience base 	<ul style="list-style-type: none"> Current status of product quality

Step 4 Determine current process capability	
Goals	Activities
<ul style="list-style-type: none"> Current process capability is determined Process improvement recommendations are documented and communicated 	<ul style="list-style-type: none"> Preparation Execution Reporting
Input	Output
<ul style="list-style-type: none"> Business goals Process descriptions Quality manuals Organizational characteristics Project plans Design documents Measurement data 	<ul style="list-style-type: none"> Process capability profiles Process assessment report and profiles Descriptive process models Preliminary improvement plan

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Step 5 Set product improvement goals	
Goals	Activities
<ul style="list-style-type: none"> Set Product improvement goals 	<ul style="list-style-type: none"> Analyse product quality discrepancies Identify product improvement areas Prioritize product improvement areas Set the product improvement goals
Input	Output
Business goals Product quality needs <ul style="list-style-type: none"> Product quality target profile Current status of product quality Process assessment reports and profiles Descriptive process models Preliminary product quality goals Product characteristics 	<ul style="list-style-type: none"> Product improvement goals

Step 6 Determine necessary process changes	
Goals	Activities
<ul style="list-style-type: none"> Identify and select process changes necessary to achieve the product improvement goals. Document the decisions on necessary process changes for later evaluation of the improvement programme 	<ul style="list-style-type: none"> Identify product quality goal Identify processes to be improved Retrieve relevant PPD models Construct characterization questionnaire Characterize the project Rank PPD models Select improvement actions
Input	Output
<ul style="list-style-type: none"> Product improvement goals Process assessment reports and profiles (from Step 4) PPD repository Preliminary improvement plan (from Step 4) 	<ul style="list-style-type: none"> Process changes to be implemented in the improvement programme Characterization of the forthcoming project or improvement programme

Step 7 Describe process changes	
Goals	Activities
<ul style="list-style-type: none"> Agree and document prescriptive process model Achieve clear understanding of the processes in order to define the metrics in the following step 	<ul style="list-style-type: none"> Mark processes/practices in the current process model, which have to be changed Develop prescriptive process model Communicate prescriptive model to process participants
Input	Output
<ul style="list-style-type: none"> Descriptive process model (from Step 4) Selected list of process changes (from Step 6) 	<ul style="list-style-type: none"> Prescriptive process model (including selected process changes) Training/presentation material for the new process

Step 8 Set metrics for the processes and product improvements	
Goals	Activities
<ul style="list-style-type: none"> Define questions and metrics related to the product quality goals Define questions and metrics related to the process performance goals Define questions and metrics related to the product-process dependency goals Construct GQM plan and measurement plan 	<ul style="list-style-type: none"> Define measurement goals Conduct GQM interviews Define questions and hypotheses Define and check metrics Produce GQM plan and measurement plan
Input	Output
<ul style="list-style-type: none"> Prescriptive process model (including selected process changes) Product quality and target profile (from Step 2) Current status of product quality (from Step 3) Product improvement goals (from Step 5) Process assessment reports and profiles (from Step 4) PPD models (from Step 6) 	<ul style="list-style-type: none"> GQM abstraction sheets GQM plan Measurement plan



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Step 9 Prepare improvement implementation	
Goals	Activities
<ul style="list-style-type: none"> Plan process changes and allocate sufficient resources to implement them Plan improvement progress meetings 	<ul style="list-style-type: none"> Plan process improvement progress meetings Make time planning and resource allocation Kick-off process changes
Input	Output
<ul style="list-style-type: none"> Development project plan Preliminary improvement plan (from Step 4) Selected list of process changes (from Step 6) Prescriptive process model (from Step 7) GQM deliverables (from Step 8) 	<ul style="list-style-type: none"> Process improvement action plan On-line process support

Step 10 Implement and monitor improvements in the development project	
Goals	Activities
<ul style="list-style-type: none"> Implement selected process changes according to process improvement plan Collect data and prepare measurement results for each feedback session Hold feedback sessions 	<ul style="list-style-type: none"> Implement process changes Collect measurement data Prepare and select measurement data Perform GQM feedback sessions
Input	Output
<ul style="list-style-type: none"> Prescriptive process model GQM plan Measurement plan Process improvement plan Development project plan 	<ul style="list-style-type: none"> Measurement data Feedback session report(s) with visualized measurement data Description of corrective actions taken Prescriptive process model applied in practice

Step 11 Evaluate Results	
Goals	Activities
<ul style="list-style-type: none"> Evaluate effect of the improvement programme on final product quality Evaluate changes to the software engineering process, methods, and tools Gather and evaluate "lessons learned" Support, modify, or reject used PPD models 	<ul style="list-style-type: none"> Evaluate the measurement results Support, modify, or reject used PPD models
Input	Output
<ul style="list-style-type: none"> PPD models Prescriptive process model Abstraction sheets GQM plan GQM measurement plan Measurement data Feedback session reports 	<ul style="list-style-type: none"> Preliminary experience packages Evaluated PPD models

Step 12 Update Experience Base	
Goals	Activities
<ul style="list-style-type: none"> Package and store all information gained during the project in the experience base for future reuse 	<ul style="list-style-type: none"> Package information Store relevant information in the experience base
Input	Output
<ul style="list-style-type: none"> Evaluated PPD models Experience base Process models GQM plan Feedback session reports 	<ul style="list-style-type: none"> Updated experience base with generalized: <ul style="list-style-type: none"> PPD models Process models GQM plans