NUS Technology

Career Development Framework for Developers

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CDF

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1. Introduction

1.1. Purpose

The purpose of this document is to describe the career framework for developers working at NUS Technology. It contains details on how to evaluate the work performance and recognize the job titles of each employee. It also plays as a framework for each employee to know their current level, what levels they can aim to and how to achieve them.

1.2. Terms and Abbreviations

The typical abbreviations used:

- NUS: NUS Technology
- ASE: Associate Software Engineer
- SE: Software Engineer
- SSE: Senior Software Engineer
- PSE: Principal Software Engineer
- CDF: Career Development Framework

2. Career Development Framework for Developers

2.1. Overview

The Career Development Framework for Developers consists of the following sections:

- Career Path
- Minimum Requirements
- Competency Metric
- Evaluation method
- Know-How
- Title recognition

2.2. Career Path

Career Path for developers is shown in Illustration 1.

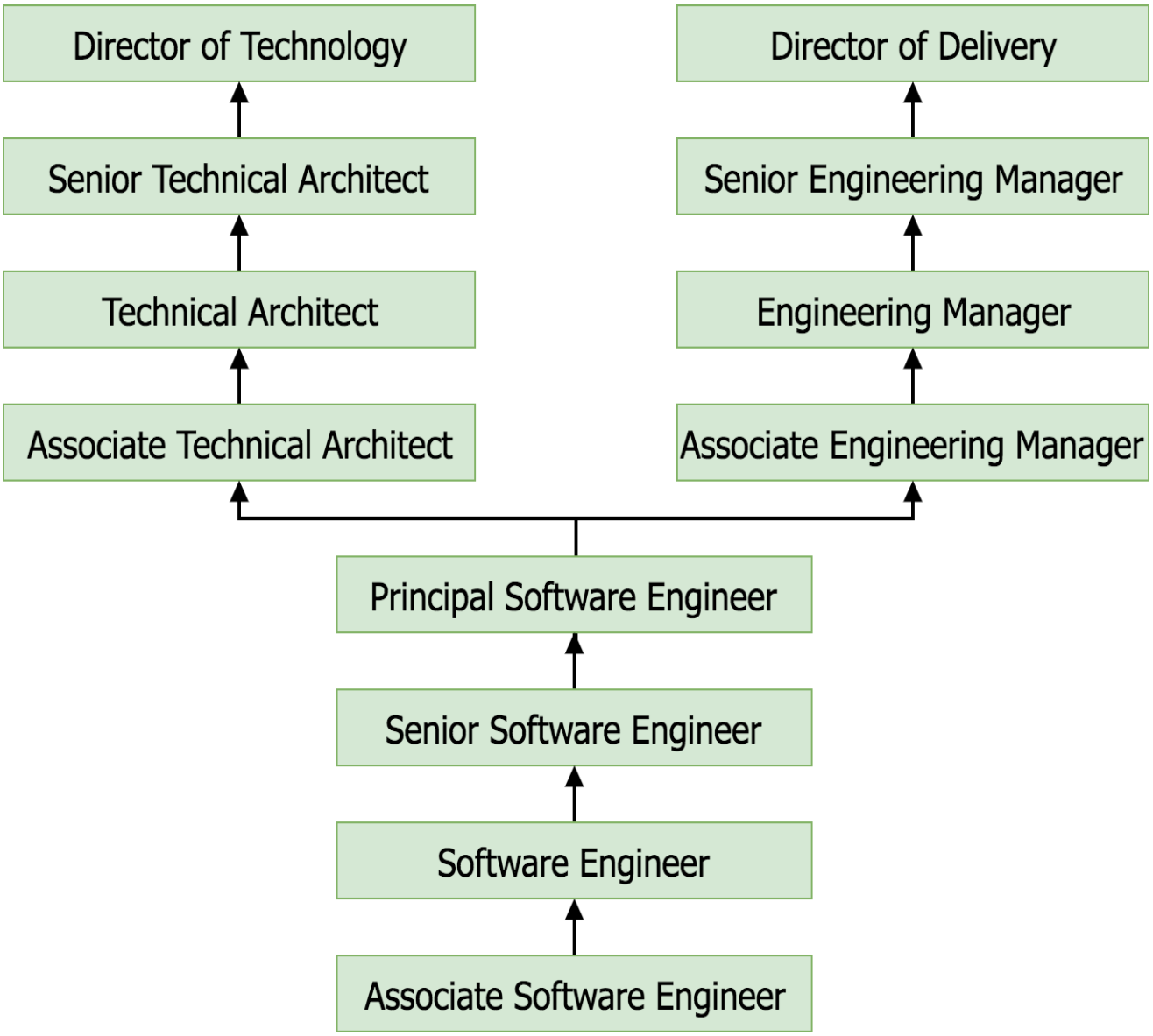

Illustration 1: Titles Map

2.3. Competency Metric

Competencies are categorized into 4 groups, each group contains many slots as followings:

- ***Technical skills:*** knowledge and abilities to accomplish tasks relating to technology
  - Technology
  - Work quality
  - Architecture

- Adaption
- Knowledge acquisition
- Estimation
- Deployment/Distribution
- Non-functional requirements
- Decision Making

- ***Communication:*** Abilities to convey information to another clearly and effectively in various contexts.
  - Insight
  - Documentation
  - Meeting
  - Client interaction
- ***Job knowledge:*** Abilities to understand his role and possess the relevant knowledge to execute assigned tasks successfully.
  - Technical requirement
  - Accountability
  - Processes
  - Domain knowledge
  - Role
- ***Management:*** Abilities to manage assigned tasks and supervise others in a team.
  - Time management
  - Direction

Each slot has several levels ranging from 1 to 4 (or 5) in the order of their difficulty. A developer ***must pass all lower levels*** to reach a certain level (for example: to satisfy level 3 of a slot, the developer must satisfy level 1 and level 2 of that slot first).

For details, please refer to the file **NUS_CDF_Competency_Metric.pdf**

2.4. Evaluation method

There are three main methods for evaluating each slot level:

- ***Verifying evidence:*** developers should fill in the evidence which can prove that they satisfy the criteria. Evidence should be specific and verifiable. PM/supervisor will confirm the validity of each evidence. Quantity and quality of the provided evidence will decide the evaluation result of each slot level.
- ***Interview:*** if the evidence cannot be provided for some reason, the assessor can interview the developer to confirm their knowledge/skills.
- ***Hands-on test:*** the developers can be asked to do a hands-on test to prove his knowledge and skills.

Interview and *Hands-on test* should only be used when it is impossible to verify the evidence. The assessor has the right to reject doing an interview or preparing a hands-on test if necessary.

2.5. Know-how

Know-how is a detailed explanation of each competency level to avoid different interpretation on the description. It also serves as a guideline to help developers understand how to pass a certain level and which evaluation method will be used to evaluate each slot level. Some levels do not have corresponding know-how because their descriptions are self-explained or they are supposed to be added in the future.

For details, please refer to the file **NUS_CDF_Know_How.pdf**

2.6. Title recognition

Level mapping is used to map the competency levels which a developer has passed into a job title. The level in each slot represents the minimum level. The developer must pass all required slot levels to be recognized for a title.

If a title has been awarded to a developer, that title can be used interchangeably depending on the context. For example, if he is a Ruby on Rails developer and he has been awarded the title *Senior Software Engineer*, he can be called *Senior Software Engineer*, *Senior Developer, Senior Software Developer*, *Senior Web Developer* or *Senior Ruby on Rails Developer*.

The exception is when switching from Web Development to Mobile App Development or vice versa, the developer must work ***at least 6 months*** on his/her new field before being recognized for his/her title. For example, if a developer currently is a Senior Developer on web development field and he switches to work on mobile app development, his title of Senior Developer will automatically recognized after he works at least 6 months on mobile app development.

For details, refer to the file **NUS_CDF_Level_Mapping.pdf**

2.7. Minimum Requirements

These are pre-conditions which need to be satisfied in order to be recognized for a job title. If at the time of evaluation, a developer passed all required slot levels for a title but still misses some of the minimum requirements, his/her title will not be recognized. In this case, the title will be automatically be recognized at the moment when that developer satisfies all minimum requirements.

For details, refer to the file **NUS_CDF_Minimum_Requirements.pdf**

3. Evaluation Process

3.1. Official evaluation

Once a year, NUS will perform the evaluation on all developers who have worked ***at least 6 months*** at NUS Technology (after the probationary period). The exact timeline for the whole process will be informed officially before each evaluation.

The entire process to evaluate developers' performance and recognize their titles is defined as in Illustration 2.

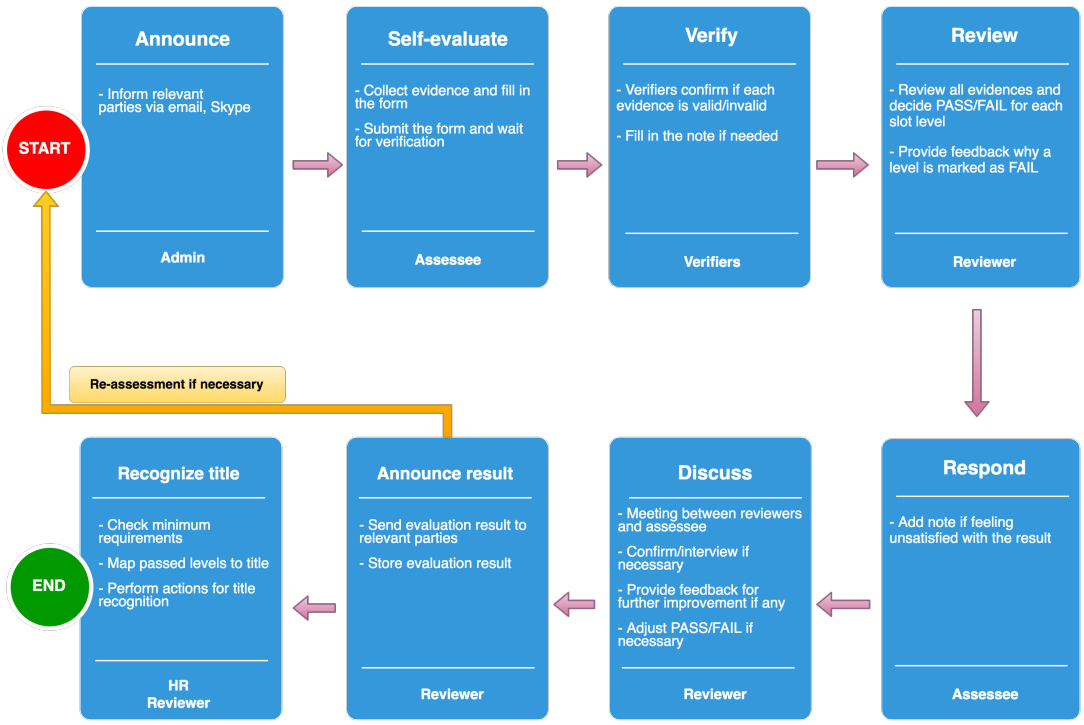

Illustration 2: Evaluation process

There are four major steps in this process:

- **Self-evaluate:** upon receiving an announcement, all qualified developers will be asked to self-evaluate their current level in each competency slot by filling in the *Evaluation Form*. Each developer is responsible for providing evidence to each competency slot. In addition, he/she also must provide the name of the person who can verify their evidence as well as the project to which the evidence belongs. After filling in the form, developers will submit it for verification.
- **Verify:** the manager/supervisor will ask relevant parties to verify the evidence provided by the developer. Verifiers will mark the evidence as VALID/INVALID depending on the quality of the evidence and if the evidence match the criteria. If the person who can verify the evidence is not available at NUS Technology at the time of the evaluation, several alternative methods will take place depending on each case:
  - Asking another person who is capable of verifying the evidence (for example, the person who used to work on the same team with the assessee). This person must get approval from the company to verify other members.
  - Conducting an interview (if it is possible to verify the slot level in that way)
  - If there is no possible way to verify the evidence, it might get rejected.

  All conflicts if any will be resolved by the CEO of NUS.
- **Review:** the reviewer (either manager/supervisor or a person assigned by company) will review all evidence and their verification to decide PASS/FAIL for each slot level. Reviewer should add detailed feedback when a slot level is marked as FAIL.
- **Respond:** the manager/supervisor will send the preliminary result to the developer which contains the result after reviewing. If the developer does not agree on some points, he/she will respond to confirm his acknowledgement and also to let the manager/supervisor know which slots he is not satisfied with. This

allows the manager to prepare for the final meeting with the developer.

- **Discuss:** a meeting will be organized which includes the developer and two reviewers:
  - the direct manager/supervisor of the developer
  - a high-level person appointed directly by the technology department.

  In addition, the person who verified the evidence of the developer might be asked to attend the meeting (if the developer is not satisfied with his verification). In this meeting, reviewers can update PASS/FAIL if needed. The meaning of PASS and FAIL is shown in Table 1. They can also give feedback to help the developer know what needs to be improved in the future.

Label	Description
PASS	Satisfies the condition
FAIL	Does not satisfy the condition, further improvements are needed

Table 1: PASS/FAIL explanation

Note: The final result will be reviewed and approved by the Director of NUS Technology.

3.2. Extra evaluation

Besides the official evaluation, an extra round of evaluation will also be organized for the following candidates:

- Developers satisfying most of the slots required to get a title but still have a few failed slots on the official evaluation (re-assessment). If they pass all failed slots in this extra round, their title will be officially recognized. Some notes:
  - Only developers who passed the minimum requirements will be qualified for this round.
  - Only failed slots will be reviewed.
  - Number of failed slots need to be less than or equal to a threshold as listed in Table 2.

Title	Number of failed slots
ASE	6
SE	4
SSE or above	2

Table 2: Maximum number of failed slots for additional review

- Developers who were not qualified for the official evaluation due to their insufficient work time at NUS, but are qualified at the time of this extra evaluation.

Extra evaluation is scheduled to be performed in about 6 months after the official evaluation.

4. Best practices

- Developers should open the evaluation form and fill in the evidence whenever there is any action or event worth writing. Do not wait until the evaluation time to fill in the form.
- Developers should confirm or clarify any unclear points well in advance.