DecidArch

A Software Architecture game for 2-4 players

Work together as a team of software architects to design a software system for a project and its stakeholders. Make various design decisions, shape the system to address the concerns of the project's stakeholders, and balance the stakeholders' requirements to find a satisfactory solution.

Game Material

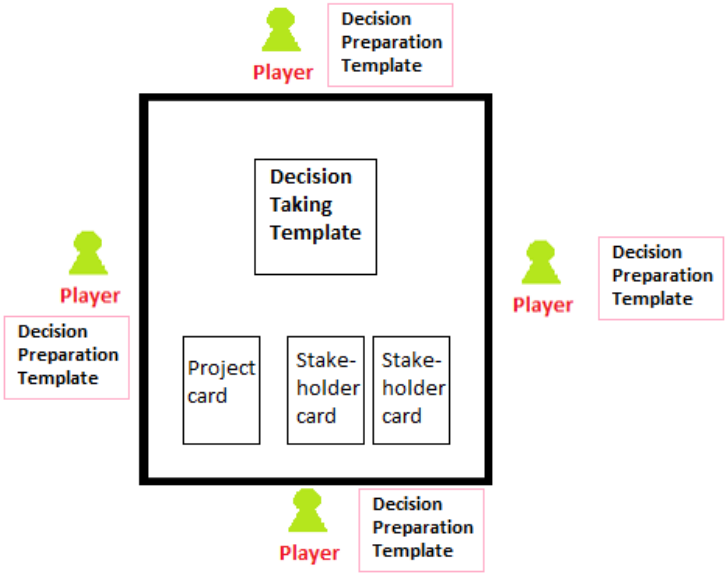
The game contains:

- 1 Project Card
- 2 Stakeholder Cards
- 9 Concern Cards
- 5 Event Cards
- 1 Decision Taking Template (Group)
- 4 Decision Preparation Templates (Individual)
- A Scoring Sheet
- This rulebook

Recommended attributes:

- A pen or pencil for every player
- A clock or stopwatch

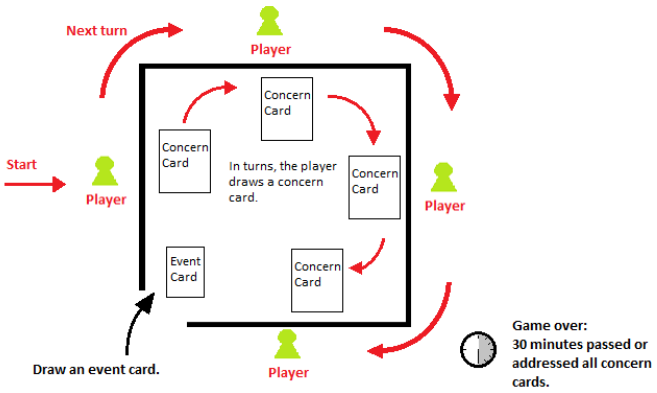
Game Setup



1. Place the Project card and the Stakeholder cards in the center of the table (face up)
2. Shuffle the stacks of Concern and Event cards and separately, and place them face down within reach of the players.
3. Put the Decision Taking Template in the center of the table.
4. Hand out a Decision Preparation Template to each player.

Game Overview

During the game, the players collaboratively design a software system. They do so by addressing the stakeholder concerns that are gradually revealed. While the design progresses, new concerns and unanticipated events may prompt the players to reconsider earlier design decisions. The players need to keep their stakeholders happy by addressing the required quality attributes of the system.



The players take clockwise turns until the end of the game. In every turn

1. The current player draws a Concern card
2. Each player, independently, suggests a design option to address the concern on the Concern card.
3. The group, collaboratively, decides which design option is chosen to address the concern.

When every player has played one turn, the round ends and a new round starts. At the end of a round, the group draws an Event card and assesses the effect of the event on their current design.

The game ends after 30 minutes or when all Concern cards have been played, whichever occurs sooner.

1 – Draw a Concern card

The current player takes the top card of the stack of Concern cards, and reads the card to the other players. The card is then placed on the table so that all players can view the information on the card.

2 – Suggest a Design Option

Each player, without discussing with the other players, picks the design option from the Concern card that they think best satisfies the project goals and the quality concerns of the stakeholders. They write down their suggestion, including the rationale for their suggestion, on their own Decision Preparation Template.

3 – Choose a Design Option

Starting with the current player, each player tells the other players which option they suggest and what their rationale for that suggestion is. Once all players have shared their suggestions, the players collectively discuss the suggestions and decide upon the option that is chosen. The players write down their collective decision on the Decision Taking Template.

Use the Decision Taking Template to keep track of the impact of your decisions on the system's quality attributes. If, for example, your chosen design option has (+) impact on Security and (- -) impact on Performance, write down one '+' in the *security* column and two '-' in the *performance* ' column of the Decision Taking Template.

Reasoning about the consistency of the design

After recording their decision, the players collectively assess whether the chosen option and the provided rationale is consistent with their previous decisions. To avoid potential inconsistencies between design decisions or in the reasoning behind the decisions, at any point in the game the players may change previous design decisions, i.e. select another design option for any of the Concern cards.

4 - Draw an Event Card

A round is over if all players had a turn. At the end of a round, draw an Event card. This Event card describes some change for the project. Reconsider the addressed concern cards to address the new situation. You may need to change some of your previous design decisions.

5 - End of the Game

The game ends after 30 minutes or when the last Concern card has been addressed. If there are no Concern cards left in the stack before the time limit, then players may review and change the design, as desired, before ending the game.

Scoring the game

Once the game has finished, the group of players calculates their collaborative score.

1. First, determine the QA-Score (number of '+' minus the number of '-') that result from your design decisions. If any of the QA-Scores is below 0, the players immediately lose the game.
   For example: the 'performance' column in the Decision Taking Template contains (for all decisions combined) 7 times a '+' and 9 times a '-'. The QA-Score for performance is -2, and the players lose the game – even if all other QA-Scores are positive. (An impact of + + counts for two '+', an impact of - - for two '-')
2. If all QA-Scores are equal to or larger than 0, the Stakeholder's QA-Priorities are compared with the respective QA-Scores. If any of the QA-Scores is lower than the QA-Priority, that stakeholder is not satisfied with the resulting design. The players immediately lose the game.
   For example: the QA-Score for 'Security' is determined to be 1. The Owner has QA-Priority 0 for security, and the User has QA-Priority 1 for security. Both stakeholders are satisfied with the security aspects of the resulting design. However, the QA-Score for 'Availability' is 1, while the Owner's QA-Priority for availability is 2. The owner is not satisfied with the availability aspects of the design, and the players lose the game.
3. If all stakeholders are satisfied for all quality attributes, their Stakeholder Satisfaction Level is expressed by the difference between their QA-Priorities and the QA-Scores.
   For example: the QA-Score for 'Security' is 1, for 'Availability' is 2, and for 'Maintainability' is 5. The Owner has QA-Priorities 0 for security, 2 for availability and 1 for maintainability. The Owner's overall Stakeholder Satisfaction Level is therefore (1-0) for security + (2-2) for availability + (5-1) for maintainability = 1 + 0 + 4 = 5.
4. The Final Score is determined by the sum of the Stakeholder Satisfaction Levels minus the number of unaddressed Concern cards.
   For example: the Stakeholder Satisfaction Level for the Owner is 5, and for the User is 3. The players ran out of time, so they did not address all concern cards (after 30 minutes of playing, there are still 3 Concern cards face down in the deck). Their final score is therefore: (5 + 3) - 2 = 6.

Final score

Less than 0	You lost the game	20 – 29	Very good
0 – 9	Sufficient	30 or more	Excellent
10 – 19	Good		

The Cards

Project Card

The Project card describes the project for which you design a software system. The Project card is revealed at the beginning of the game.

Stakeholder Cards

A Stakeholder card describes one of the system's stakeholders. The Stakeholder cards are revealed at the beginning of the game.

Stakeholders have quality concerns regarding the quality attributes of the system. The quality attributes are written on the stakeholder cards (e.g. security). The QA-Priority indicates the priority a quality attribute has for that stakeholder (higher number = higher priority). A stakeholder's quality concerns are met if the system's QA-score for that quality attribute (the sum of all '+' minus the sum of all '-' for all design decisions taken) is at least as high as the stakeholder's QA-Priority.

Concern Cards

A Concern card describes a concern and accompanying design options. Every turn, an additional Concern card is revealed. A Concern card contains several design options that can be used to address the concern. Each option has a different impact on the quality attribute(s) of the system: very negatively (- -), negatively (-) neutral (=), positively (+), very positively (+ +).

Players pick one of the design options, or suggest their own (see *Advanced game*, below).

When all Concern cards have been addressed, the game ends.

Advanced game

Some concern cards have a <?> symbol in the list of design options or quality impacts. Identify any potential new entries that can be used to fill in the <?> symbol (i.e. new quality impacts or design options).

Players can identify new options in the suggested / chosen options column of the Decision Preparation / Decision Taking templates. This can be done at any point of the game if desired.

Players can change quality impacts of existing design options by recording them in the Rationale column of the Decision Preparation / Decision Taking Templates. This can be done at any point of the game if desired.

Event Cards

An Event card describes an event with lasting effects on the project. At the end of every round (i.e., when all players have played a turn), a new Event card is revealed and added to the game. This card describes some change for the project, that may lead to necessary changes in previous design decisions, or may influence decisions yet to be taken.

The changes introduced by an Event card last the entire game.

Note: If there are no event cards left in the stack, the game continues without drawing an event card.