50.033

Foundations of
Game Design
and Development

GAME DESIGN PROCESS

Conceptualisation & prototyping

SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Materials taken from: Rules of Play - Game Design Fundamentals, Salen & Zimmerman (2004), Part 2

WHAT WE HAVE LEARNED SO FAR

- **Introduction**: history, current trends, 100 rules of game mechanics
  - Informal ‘must-have’ rules according to popular beliefs, as an introduction to the course
  - Goal: to learn how to design a game

- The ‘**what**’: formal elements, rules, core game mechanics, and game genres:
  - Basic stuff about *what makes up a game*, *what types of games*, and *what types of players* are out there

WHAT WE HAVE LEARNED SO FAR

- The '**why**': Octalysis
  - Explains *why some games are successful*
  - and *why some people are attracted / addicted to certain games*

- The '**how**' (part 1): Generic & genre-specific design principles
  - They serve as a guidance when designing and developing games
  - So that *we can avoid errors ahead of time*

WHAT WE ARE GOING TO LEARN

- The '**how**' (Part 2): *Process of designing a game (today)*
  - It is time to walk through the process of designing a game of your own.
- Conceptualization, prototyping, then testing
- Game design document (to be submitted on Week 8, 2nd lesson)
- *Iterative process*

CONCEPTUALISATION

- The book said:
  - Generate ideas using *brainstorming skills*: state a challenge, come up with lots of ideas, put it on the wall, don't criticise each other, do it quickly, draw mind maps
  - Generate ideas using *alternate methods:* list creation with idea cards, research
  - *Editing and refining:* think about technical and timeline feasibility.

CONCEPTUALISATION

- However…
  - If you're here there's a chance that you'd already know what kind of games you want to do
  - Decide on a genre, high level ideas, and refine it later along the way, **iteratively**
  - Convince your teammate your idea is the best

FOCUS ON THE FORMAL ELEMENTS

- How to choose which ‘idea’ is the best?
- The best idea is most likely the one that has answers to each of the following questions:
  - What is the *goal* for each player?
  - What is the *conflict* in my game?
  - What are the *rules* of my game?
  - What *actions* do the player take and when?

FOCUS ON THE FORMAL ELEMENTS

- *Are there 'turns'?* How do they work?
- *How many* players are there in the game?
- *How long* does it take for the game to resolve?
- What is the working *title*?
- What is the *target audience?*
- What *platform* will this game run on?
- What *restrictions* or *opportunity* does the environment (game world) have?

SUMMARY ON CONCEPTUALISATION

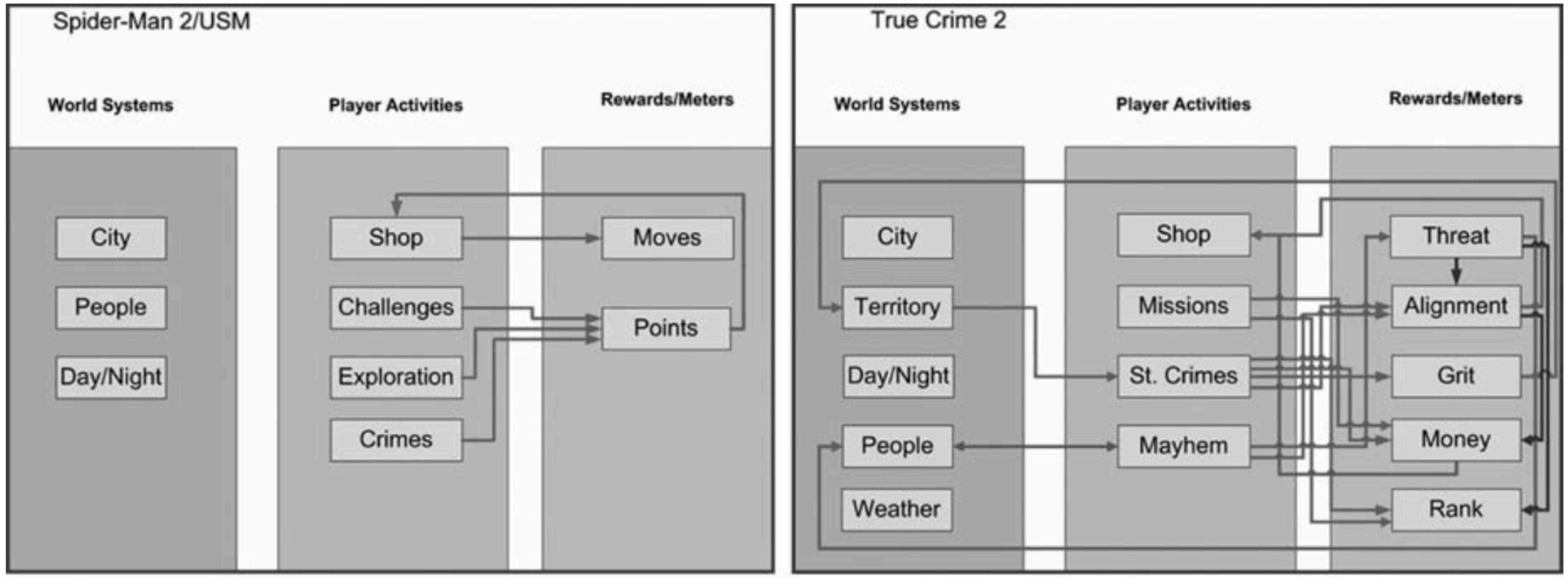
- If this is your first time designing a game, you can simply **borrow elements** from successful games and adapt them to their own purposes (recommended)
- You can go one step further by *breaking conventions* and go where other designers dare not tread, most likely because the technology has advanced (*difficult*), such as modernising some elements of old board games

PROTOTYPING

- Begin with **physical prototyping** to test your idea:
  - Use stick figure drawings
  - Draw out the environment
  - Basically just to ensure that your idea has potential
  - Reason behind prototyping before you start coding anything: so that its easy to make changes iteratively

PROTOTYPING

- Visualize your core gameplay



Diagrams courtesy of Activision Central Design (Jeff Chen and Carl Schnurr)

7.10 Visualization of gameplay mechanics for Spider-Man 2 and True Crime 2

DIGITAL PROTOTYPING

- Four areas to investigate:
  - **Game mechanics:** how to perform action and show feedback programatically?
  - **Kinesthetics:** ‘feel’ of the game, responsiveness of the platform and devices
  - **Technology:** AI systems, game engines, sound card, graphics card (shouldn’t be much of a concern nowadays)
  - **Aesthetics:** how the game looks and sounds

KINESTHETICS

- Prototyping the game feel has a lot to do with *designing the control schemes*

- Is it **natural** to press the control buttons? Otherwise will you allow players to customise it?
- If you develop a mobile game, are the controls easily *accessible* in the touch screen?

PLAYTESTING

- Looks like the most fun and satisfying part of the process, but it can be frustrating as well of course if it wasn't well received
- Who are the ideal playtesters?
  - *Anybody that's not part of your group and fit the target group*

WHAT ARE YOU TESTING FOR?

- **Functionality:** Is your game 'bug' free? Is your game working properly?
- **Completeness:** Does your game have loopholes or dead ends?
- **Balance:** Is there any overpowering strategy? Is the game too difficult / easy? Is the time taken for a player to complete the game / a part of the game longer or shorter than you expected? Is the game fair?

PLAYTESTING

- **Refrain** from instructing the testers what to do
- Take note of:

1. Their *general behavior* towards the game: are they confused? are they interested?
2. *Time taken* to get the game mechanics and controls (this should be a few minutes)
3. Any *voluntary feedback* regarding the game

PLAYTESTING

- Remember:
  - It is *your game*, so you don't have to take *all* feedback seriously
  - Pay more attention to *generic* feedback, those involving common sense
  - **Iteratively** test your game

SAMPLE PLAYTESTING QUESTIONS

- Choose 3-4 short questions to ask
- Questions with yes/no answers are easiest to ask
- Try to answer these questions by observing them instead of asking them directly

9.10 Observations and Playtester Comments

In-Game Observations

[Your thoughts as you watch the testers play]

In-Game Questions

[Questions you ask the testers as they play]

1. Why did you make that choice?
2. Does that rule seem confusing?
3. What did you think that would do?
4. What is confusing you?

Postgame Questions

[Questions you ask the testers after they have played]

General questions

1. What was your first impression?
2. How did that impression change as you played?
3. Was there anything you found frustrating?
4. Did the game drag at any point?
5. Were there particular aspects that you found satisfying?
6. What was the most exciting moment in the game?
7. Did the game feel too long, too short, or just about right?

Formal elements

1. Describe the objective of the game.
2. Was the objective clear at all times?
3. What types of choices did you make during the game?
4. What was the most important decision you made?
5. What was your strategy for winning?
6. Did you find any loopholes in the system?
7. How would you describe the conflict?
8. In what way did you interact with other players?
9. Do you prefer to play alone or with human opponents?
10. What elements do you think could be improved?

Dramatic elements

1. Was the game's premise appealing to you?
2. Did the story enhance or detract from the game?
3. As you played, did the story evolve with the game?
4. Is this game appropriate for the target audience?
5. On a piece of paper, graph your emotional involvement over the course of the game.
6. Did you feel a sense of dramatic climax as the game progressed?
7. How would you make the story and game work better as a whole?

Procedures, rules, interface, and controls

1. Were the procedures and rules easy to understand?
2. How did the controls feel? Did they make sense?
3. Could you find the information you needed on the interface?
4. Was there anything about the interface you would change?
5. Did anything feel clunky, awkward, or confusing?
6. Are there any controls or interface features you would like to see added?

End of session

1. Overall, how would you describe this game's appeal?
2. Would you purchase this game?
3. What elements of the game attracted you?
4. What was missing from the game?
5. If you could change just one thing, what would it be?
6. Who do you think is the target audience for this game?
7. If you were to give this game as a gift, who would you give it to?

Revision Ideas

[Ideas you have for improving the game]

THE GAME DESIGN DOCUMENT

- **Game design document:**
  - The document you made *before* you perform digital prototyping, and *after* you finish conceptualisation
  - It serves as a *reference*
  - So it can evolve over time, but you need to *keep track of the changes and the reasons behind it*

Game Design Workshop-A playcentric approach to creating innovative games (2nd Ed.), Fullerton, 2008, Ch. 14

CONTENTS

- In general we can break up the content into the following areas:
  1. Overview and vision statement
  2. Audience, platform, and technical specs
  3. Gameplay
  4. Characters (if available)
  5. Story (if available)
  6. World (if available)

OVERVIEW

- Track your design history: A design document is a *continuously changing* reference tool
- Most of your teammates won't have time to read the whole document over and over again every time that a new version is released, so it is good to **alert** them to any significant modifications or updates that you have made.
- As you can see, each version will have its own section where you list the major changes made in that iteration:
  - 1.1 Version 1.0
  - 1.2 Version 2.0
    - 1.2.1 Version 2.1

VISION STATEMENT

- Goal: to *capture* the main *essence* of your game
- Be *concise*, don't write too long

2. Vision statement

This is where you state your vision for the game. It is typically about 500 words long. Try to capture the essence of your game and convey this to the reader in as compelling and accurate a way as possible.

2.1 Game logline

In one sentence, describe your game.

2.2 Gameplay synopsis

Describe how your game plays and what the user experiences. Try to keep it concise—no more than a couple of pages. You might want to reference some or all of the following topics:

- Uniqueness:
  What makes your game unique?
- Mechanics:
  How does the game function? What is the core play mechanic?
- Setting:
  What is the setting for your game: the Wild West, the moon, medieval times?
- Look and feel:
  Give a summary of the look and feel of the game.

Materials taken from: Game design, Bob Bates, 2nd edition (2004), Ch. 10

TARGET AUDIENCE AND PLATFORM

3.1 Target audience
Who will buy your game? Describe the demographic you are targeting, including age, gender, and geographic locations.

3.2 Platform
What platform or platforms will your game run on? Why did you choose these platforms?

3.3 System requirements
System requirements might limit your audience, especially on the PC, where the hardware varies widely. Describe what is required to play the game and why those choices were made.

3.4 Top performers
List other top-selling games in the same market. Provide sales figures, release dates, information on sequels and platforms, as well as brief descriptions of each title.

3.5 Feature comparison
Compare your game to the competition. Why would a consumer purchase your game over the others?

- A very *short section* on the target age group or audience for your game
- Is it for kids? Is it gender specific?
- Also state the platform required to run the game and technical requirements

GAMEPLAY INFORMATION

- Describes *how your game works*
- What are the game mechanics and how they came into play?
- What are the *formal elements* of your game?
- What are the *core drives of your game?*

5. Gameplay

5.1 Overview

This is where you describe the core gameplay. This should tie directly into your physical or software prototype. Use your prototype as the model, and give an overview of how it functions.

5.2 Gameplay description

Provide a detailed description of how the game functions.

5.3 Controls

Map out the game procedures and controls. Use visual aids if possible, like control tables and flowcharts, along with detailed descriptions.

5.3.1 Interfaces

Create wireframes, a type of functional visualization described on page 400, for every interface the artists will need to create. Each wireframe should include a description of how each interface feature functions. Make sure you detail out the various states for each interface.

5.3.2 Rules

If you have created a prototype, describing the rules of your game will be much easier. You will need to define all the game objects, concepts, their behaviors,

GAMEPLAY INFORMATION

- Describes *how your game works*
- What is the scoring system?
- What are the levels in the game?
- How long it takes to complete the game?

and how they relate to one another in this section.

5.3.3 Scoring/winning conditions
Describe the scoring system and win conditions. These might be different for single player versus multiplayer or if you have several modes of competition.

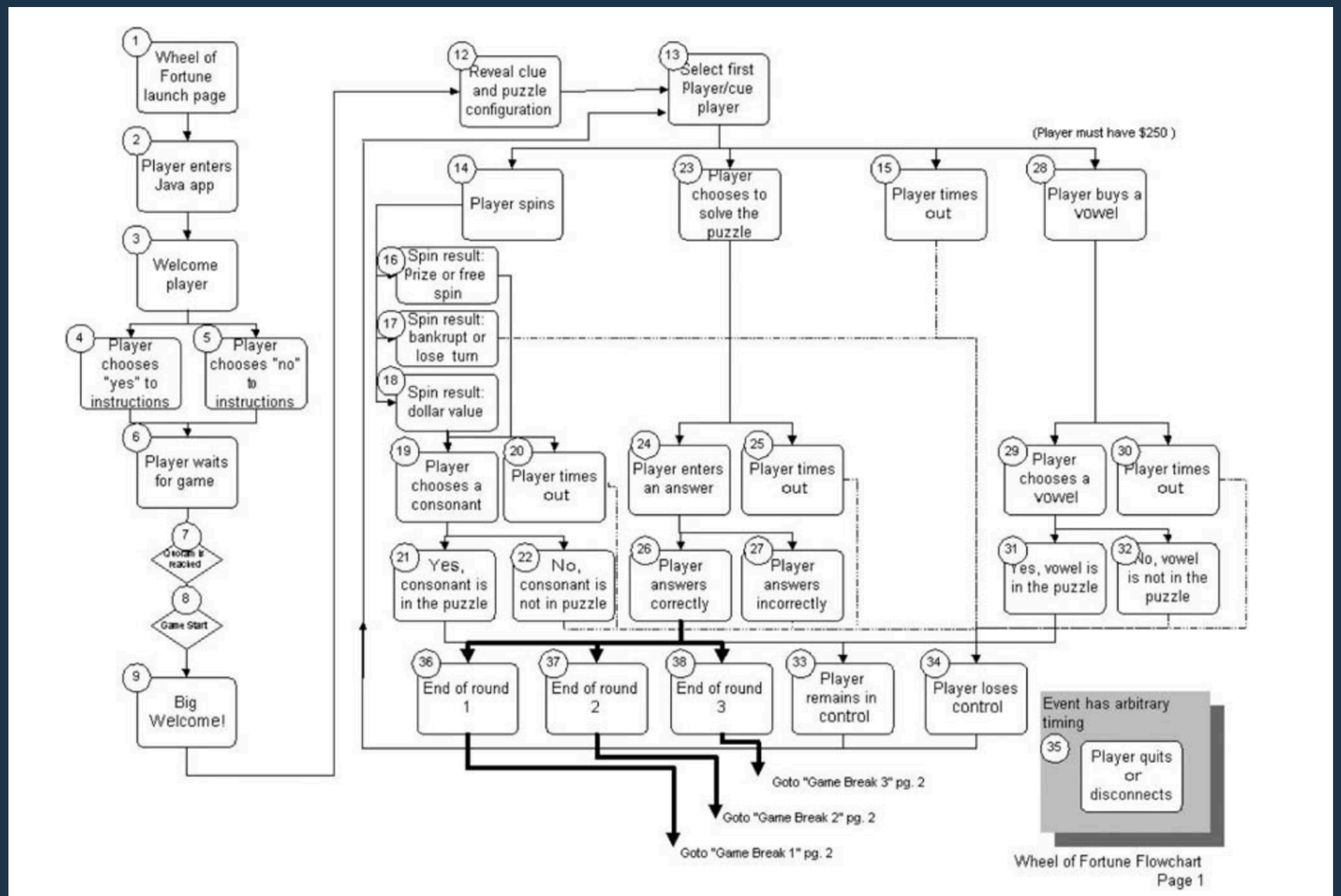
5.4 Modes and other features
If your game has different modes of play, such as single and multiplayer modes, or other features that will affect the implementation of the gameplay, you will need to describe them here.

5.5 Levels
The designs for each level should be laid out here. The more detailed the better.

5.6 Flowchart
Create a flowchart showing all the areas and screens that will need to be created.

FUNCTIONAL VISUALISATION

- It is easier to use *flowchart* when describing gameplay



14.2 Flowchart for multiplayer Wheel of Fortune

GAME CHARACTERS

6. Game Characters

6.1 Character design

This is where you describe any game characters and their attributes.

6.2 Types

6.2.1 PCs (player characters)

6.2.2 NPCs (nonplayer characters): If your game involves character types, you will need to treat each one as an object, defining its properties and functionality.

6.2.2.1 Monsters and enemies

6.2.2.2 Friends and allies

6.2.2.3 Neutral

6.2.2.4 Other types

6.2.2.5 Guidelines

6.2.2.6 Traits

6.2.2.7 Behavior

6.2.2.8 AI

- Not all games have characters, but if you have, this section is used to explain all characters in your game
- Use names
- Provide a direct link and reference to this section
- For example. the character name *Nephalem* is used to describe gameplay and story of Diablo III earlier in the document. Provide a direct link so that the word *Nephalem* is clickable and refer readers to this section for details

Materials taken from: Game design, Bob Bates, 2nd edition (2004), Ch. 10

STORY

- Not all games have storyline, but if you do, this section is meant to summarise the storyline
- This section should be *self-contained*, meaning that I can read this section and understand the setting of your game
- Again, you can provide links to this section in the earlier parts of the document so you dont have to explain some terms repetitively, e.g: *the Greater Rift*

7. Story

7.1 Synopsis
If your game includes a story, summarize it here. Keep it down to one or two paragraphs.

7.2 Complete story
This is your chance to outline the entire story. Do so in a way that mirrors the gameplay. Do not just tell your story, but structure it so that it unfolds as the game progresses.

7.3 Backstory
Describe any important elements of your story that do not tie directly into the gameplay. Much of this might not actually make it into the game, but it might be good to have it for reference.

7.4 Narrative devices
Describe the various ways in which you plan to reveal the story. What are the devices you plan to use to tell the story?

7.5 Subplots
Because games are not linear like books and movies, there might be numerous smaller stories interwoven into the main story. Describe each of these subplots and explain how they tie into the gameplay and the master plot.

7.5.1 Subplot #1

7.5.2 Subplot #2

Materials taken from: Game design, Bob Bates, 2nd edition (2004), Ch. 10

THE GAME WORLD

8. The Game World

If your game involves the creation of a world, you need to go into detail on all aspects of that world.

- 8.1 Overview
- 8.2 Key locations
- 8.3 Travel
- 8.4 Mapping
- 8.5 Scale
- 8.6 Physical objects
- 8.7 Weather conditions
- 8.8 Day and night
- 8.9 Time
- 8.10 Physics
- 8.11 Society/culture

- The *environment* of the game
- It is obvious how to describe this in RPG games
- However for casual games, then we can just describe the boundaries and interface of the game here

Materials taken from: Game design, Bob Bates, 2nd edition (2004), Ch. 10

MIDTERM GDD

- 15 pages maximum, including references, figures, tables etc
- Font size 12, single spacing
- No restriction on how you want to present your information, but usage of figures, tables, any visual aid is recommended

Materials taken from: Game design, Bob Bates, 2nd edition (2004), Ch. 10

MIDTERM GDD

- We have learned several topics so far:
  - Formal Elements of Games
  - Core Game Mechanics & Genres
  - Core Drives
  - Principles of Game Design: player empathy, feedback, etc
  - Game Rules
  - Level design
- Use them wherever appropriate in your mid-term GDD
- **Remember, whatever you *promised* during mid-term GDD has to be either:**
  - **Fulfilled in the final project**
  - **OR, modified with reasonable justification**

Materials taken from: Game design, Bob Bates, 2nd edition (2004), Ch. 10

SUMMARY

- Game design process: conceptualisation, prototyping, playtesting
- Iterative process
- Game design document