National Defence / Défense nationale

ASSISTANT DEPUTY MINISTER (DEFENCE RESEARCH AND DEVELOPMENT CANADA)

DGRDSE

CANADIAN ARMED FORCES / FORCES ARMÉES CANADIENNES

DRDC RDDC

Game Development

Ben Taylor, DRDC CORA

Canada

Introduction

- In this part of the workshop we're going to explore the process by which a game is designed.
- We will first consider the steps taken to design a game, which is largely independent of the actual type of game that is being developed
- We will then look at some particular design issues that may need to be considered
- Finally we can take questions or discuss issues of game design and development

Game design process

Game design #1 - research the subject

- If you aren't an expert, and haven't got one in the team, then you need to research the problem space that the game is to be based on
  - What is it all about?
  - Who are the actors?
  - What are they trying to do?
  - What is the environment like?
  - What is the system that players would be trying to interact with, or through?
  - Are there special attributes of this environment that need to be captured to provide a good 'flavor' to the game?

Game design #2 – it's all about decisions

- Good games are about the decisions that participants have to make.
  - Which are the decisions we are interested in?
    - Do they involve resources or assets of some kind?
  - Who makes them?
  - Who (or what) are impacted by them?
  - Which decisions are made by players, and which by other means:
    - White cell
    - Scripts
    - Decision trees
- From this analysis we should have a feel for what we want the scope of the game to be.

Game design #3 – The players

- If an analytical game, then how many players can you get and how long can you have them for?
- If a training/educational game then how big a group have to be involved, and how much time is set aside for the activity?
- These are major design constraints on the type and complexity of the game that you can develop

Game design #4 - Prototyping and Playtesting

- As early as possible put together a prototype and play with it - It will inevitably fail at some point
  - It might be a hybrid of different types, e.g., a matrix game supported with spreadsheet models. That's OK!
- Iterate designs and keep testing, testing, testing
  - At some point you may have to backtrack and take a new direction if a design seems broken
  - Involve lots of people. New play testers will inevitably come up with new ways to break the game!
- As things firm up build better components, draft player rules, and build any supporting software that you need
- Rehearsals are not playtests.
  - They are for controllers to practice their roles with stand-in players using the final form of the game.

Game design #5 – Player centric games

- The decisions made by players are key to the success of the game
- The players may not be experts in the subject of the game, may not be familiar with the type of game you have designed, and certainly won't be familiar with your specific game.
  - So make it as easy for them to play as you can
    - Hide as much of the game's technical content from them as possible
    - Play the game in real-world language and minimize game jargon
    - Consider using "pucksters" - participants who convert the players' intentions into game moves – if the game has complicated rules or IT interfaces
    - Provide read-ahead material, but assume that it won't be read and make sure that you can explain everything clearly to the players before play begins

Game design #6 – Game Integration

- Always bear in mind that a successful game is more than ‘just’ the game rules and playing materials.
- There are also the players, the controllers, perhaps specialist expert cells, clients, and stakeholders, and all of the relationships between them, to manage.
- You may also have to manage supporting tools and logistics to enable everything.
- Never lose sight of the idea that it is the interaction of the players through the environment of your game design that produces the real benefits.
  - It is not the case that the players are simply brought in to enable your game!

Game design considerations

Sponsors or Clients

- For a training/educational game agree early on with the client what behaviors or skills the players are supposed to be working with.
  - Make sure that they are central to the game design
- For an analytical game try to find the question behind the question
  - What do they (sponsor/client) want to know?
  - Why do they want to know it?
  - Why don't they already know it?
  - Are there particular people or organizations they want to participate?
- Keep sponsors engaged and informed of progress
  - But don't let them take over and drive the design – don't let them play you!

Game Logistics

- Every game has logistical requirements
  - Playing space (unless a distributed game – see next slide)
  - Seating
  - Separate rooms or dividers if players and/or controllers need to be separated from each other
  - Multiple copies of maps etc. if using separated spaces
  - Power
  - Computers and software
  - Screens and projectors
  - Tea/coffee/snacks/refreshments – keep your players comfortable!
- Allow time for
  - setup and tear down
  - Breaks
  - Debriefs/washups

Distributed gaming

- COVID-19 has changed gaming for good (and probably for the better)
- Tools exist that replicate tabletop gaming environments
  - Tabletop Simulator, Vassal etc.
- Tools such as Teams, WebEx and Discord allow remote connection to distributed games
- Best practices have been developed for designing and running distributed games. Examples:
  - Keep separate comms tools for game controllers
  - Have dedicated staff to make sure everyone can get in and out of the game and move between virtual rooms as required
  - Never leave players alone, always have a controller in every active room to answer questions and provide guidance
- Despite extra setup costs, and possibly larger control teams, distributed gaming allows anyone from anywhere to take part – adding to the diversity of contributions.

Data Collection

- For analytical games, make sure to have a data collection plan
  - What are you trying to learn from the game?
  - What data are you going to collect to inform this learning?
  - How are you going to collect it?
  - Who is going to collect it?
  - Make sure everyone knows the plan and has rehearsed it!
- Design tools to record data
- Human research ethics reviews may be required if you are in a scientific organization
  - Find out if you need one and make sure you get it done in time

Analysis

- Having get a data collection plan, develop an analysis plan to use the data.
- Build and test any software tools required well in advance - even spreadsheets.
- As much as possible, automate and standardize the analysis by planning in advance
  - Use word ladders or key words for analysis of unstructured text
  - Use spreadsheets, or other data analysis tools, to process structured, quantitative data and produce statistics, graphics etc.
- Conduct and deliver the analysis as quickly as possible
  - Perhaps some initial findings can be shared at the end of the game when key stakeholders may be present

Assessment

- For educational games assessing player performance may be important.
- Engage with the sponsor and agree early the kind of assessment that is sought
- Where possible standardize, automate and build into the game
  - But use other techniques (like post-game questionnaires) where required
- Make the assessment as unobtrusive as possible
  - Try to avoid players having to switch in and out of the game to complete assessments – it disrupts game flow.
- Do it promptly – the client may be waiting for your input to wrap up a course.

Discussion