PAPER PROTOTYPING
Topics
Topics

- Benefits of Paper Prototypes
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- Paper Prototyping Tools
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- Benefits of Paper Prototypes
- Paper Prototyping Tools
- Example Paper Prototype
Topics

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- Paper Prototyping Tools
- Example Paper Prototype
- Constructing the Prototype
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- Constructing the Prototype
- Playtest Questions
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- Best Uses of Paper Prototyping
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- Best Uses of Paper Prototyping
- Poor Uses of Paper Prototyping
Benefits of Paper Prototypes
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Digital technologies have led to a whole new world of possibilities for game design
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Digital technologies have led to a whole new world of possibilities for game design. But many designers still use paper prototypes to quickly implement and test new game ideas.
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The two main reasons for this are:

**Speed & Ease of implementation**
Benefits of Paper Prototypes
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- Initial Development Speed
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  - It is very fast to get from concept to playable prototype
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- **Low Technical Barrier to Entry**
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  - Very little technical knowledge or artistic talent is required to make a paper prototype
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- **Low Technical Barrier to Entry**
  - Very little technical knowledge or artistic talent is required to make a paper prototype
  - Therefore, anyone on your team can meaningfully contribute
Benefits of Paper Prototypes
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- Collaborative Prototyping Process
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  - It can also help all team members to feel a sense of ownership over and commitment to the project
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- **Focused Prototyping and Testing**
Benefits of Paper Prototypes

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  - A paper prototype is always *very* different from the final digital game
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- **Focused Prototyping and Testing**
  - A paper prototype is always *very* different from the final digital game
  - This allows you to test specific aspects of the game without playtesters being distracted by the rest of the product
Paper Prototyping Tools
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- Large Sheets of Paper
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- **Large Sheets of Paper**
  - 24" x 36" Post-it® sheets are particularly popular
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  - Grid paper can also be found
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  - Normal RPG dice include: 1d4, 2d6, 1d8, 1d12, 1d20, and percentile dice (2d10 with one marked 0-9 and the other 00-90)
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    - Place a regular card in the sleeve with a slip of paper on top of it
Paper Prototyping Tools
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- 3x5 Note Cards
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- **3x5 Note Cards**
  - 3" x 5" note cards can be used in several situations
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    - Brainstorming
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    - Folding into pieces
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    - Making quick card decks
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- **Whiteboard**
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- **Whiteboard**
  - Have lots of colors of markers available
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▪ **Whiteboard**
  – Have lots of colors of markers available
  – Be sure to snap a photo of the board before erasing it!
Paper Prototyping Tools
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- Pipe Cleaners / Legos / Building Toys
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- **Pipe Cleaners / Legos / Building Toys**
  - Tools you can use to quickly build things
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    - I carry both digital and paper notebooks
Example Paper Prototype
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- Initial Digital Game Concept
Example Paper Prototype

- Initial Digital Game Concept
  - Tablet game
Example Paper Prototype

- **Initial Digital Game Concept**
  - Tablet game
  - Based on the *Blitz* turn-based tactical combat system in *Valkyria Chronicles* (SEGA, 2008 for PlayStation 3)
Example Paper Prototype

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  - Combat is a mixture of turn-based and real-time
Example Paper Prototype

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    - Player moves a single character in real-time
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  - Combat is a mixture of turn-based and real-time
    - Player moves a single character in real-time
    - The character can move a limited distance
    - Enemy characters are immobile, but can shoot at the player's character if they see her
Example Paper Prototype

Legend:
- Ally Character
- Enemy Character
- Building
- Low Cover / Wall
- Path

Top-down map view. Player draws a path to set movement for an ally.

As the ally moves, the camera is 3rd person over-the-shoulder. Areas glow green to show possible cover.

Tapping on a green cover area will cause the ally to go into cover. While in cover, enemy shots will hit less frequently, and the ally can see around corners.

Any time during the move, the player can press the Attack! button. Then she has until the yellow timer runs out to line up her shot and press Fire!
Example Paper Prototype

- **Initial Game Concept**

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  - Ally Character
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- **Top-down map view**

- **As the ally moves, the camera is 3rd person over-the-shoulder. Areas glow green to show possible cover.**

- **Tapping on a green cover area will cause the ally to go into cover. While in cover, enemy shots will hit less frequently, and the ally can see around corners.**

- **Any time during the move, the player can press the Attack! button. Then she has until the yellow timer runs out to line up her shot and press Fire!**
Example Paper Prototype

- **Initial Game Concept**

  - Start by making simple mockups of the digital game screens

  ![Legend](image)
  
  Ally Character
  Enemy Character
  Building
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  Path

  ![Top-down map view. Player draws a path to set movement for an ally.](image)

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- Elements that can be tested with the paper prototype
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- Elements that can be tested with the paper prototype
  - Map Layouts / Level Design
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- Elements that can be tested with the paper prototype
  - Map Layouts / Level Design
    - What kind of maps will work well for this game?
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    - What kind of maps will work well for this game?
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    - As the **Game Master (GM)**, the designer will play the role of the AI
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    - As the **Game Master (GM)**, the designer will play the role of the AI
    - Acting as the computer player during playtests, the designer can learn several things
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      - The best goals (and ranking of goals) for the AI
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      - Good AI moves and attack types
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      - The best goals (and ranking of goals) for the AI
      - Good AI moves and attack types
    - From the experience of pretending to be the AI during playtests, a designer can learn how the AI should be designed
    - Remember, the AI should be designed **not** to defeat the player, but instead to be **fun for the player to defeat**!
Example Paper Prototype
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- Elements that can be tested with the paper prototype
Example Paper Prototype

- Elements that can be tested with the paper prototype
  - Weapon Designs
Example Paper Prototype

- **Elements that can be tested with the paper prototype**
  - Weapon Designs
    - Several aspects of weapon design can be tested
Example Paper Prototype

▪ Elements that can be tested with the paper prototype
  – Weapon Designs
    • Several aspects of weapon design can be tested
      – Chances of each shot hitting (Accuracy)
Example Paper Prototype

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      - Amount of damage per shot
Example Paper Prototype

- Elements that can be tested with the paper prototype
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    - Several aspects of weapon design can be tested
      - Chances of each shot hitting (Accuracy)
      - Amount of damage per shot
      - Effective range
Elements that can be tested with the paper prototype

- Weapon Designs
  - Several aspects of weapon design can be tested
    - Chances of each shot hitting (Accuracy)
    - Amount of damage per shot
    - Effective range
    - Balance vs. other weapons
Example Paper Prototype

- Elements that can be tested with the paper prototype
  - Weapon Designs
    - Several aspects of weapon design can be tested
      - Chances of each shot hitting (Accuracy)
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      - Effective range
      - Balance vs. other weapons
      - And several others similar aspects
Example Paper Prototype

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  - Finding the Fun
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  - **Finding the Fun**
    - Some of the fun of the digital game will be due to graphics, movement, and touch-based interaction
    - But, the fun of the core mechanic should come from tactically outsmarting the enemies
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  - Finding the Fun
    - Some of the fun of the digital game will be due to graphics, movement, and touch-based interaction
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      - This can absolutely happen in the paper prototype
Constructing the Prototype
Constructing the Prototype

- Start this game by building a Player Map
Constructing the Prototype

- Start this game by building a Player Map
  - 1/2" Hex graph paper
Constructing the Prototype

- Start this game by building a Player Map
  - 1/2" Hex graph paper
  - Gray = buildings / Brown = low walls / Red = capture points
Constructing the Prototype
Constructing the Prototype

- Then make a GM (Game Master) Map
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    - Leave blind spots in your patrols
Constructing the Prototype: Rules
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- Objective
Constructing the Prototype: Rules

- **Objective**
  - The player's objective is to capture all three control points
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- Setup
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    - All other player units must be placed in adjacent hexes
Constructing the Prototype: Rules
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- Visibility
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    - When the enemy unit is not longer visible, the GM should remove it
Constructing the Prototype: Rules
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- Movement
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- **Movement**
  - On each of the player's turns, she has 4 Action Points (AP)
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- Once during an action, the player unit can fire her weapon
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- Weapons and Firing
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  - Each unit carries one weapon
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    - The enemy unit would take 2 points of damage for each shot that hit
Constructing the Prototype: Rules

**Pistol - 3 Shots @ 2 Damage/Shot**

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**Rifle - 2 Shots @ 4 Damage/Shot**

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**Shotgun - 1 Shot @ 6 Damage/Shot**

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**Sniper Rifle - 1 Shot @ 6 Damage/Shot**

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**Machine Gun - 10 Shots @ 1 Damage/Shot**

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  - Process:
    - Calculate the odds of hitting based on the range to the enemy and the table on the next slide
    - Roll 1d6 for each of the shots fired (a Pistol has 3 shots)
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      - It immediately turns to face its attacker and shoots back
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- Cover
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    - If a unit is shot, and the damage would have totaled 7 points
    - The damage is halved and rounded down to 3 if the unit is in cover
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- Corner Cover and Visibility
Constructing the Prototype: Rules

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- **Corner Cover and Visibility**
  - If a unit is in cover next to the corner of a building the unit is treated as having visibility around both sides of the corner
    - Simulates peering around the corner
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- Health
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- Interception Fire
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  - In an Interception Attack half of the normal shots are fired (rounded up)
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- **Interception Fire**
  - Stationary units can sometimes fire on the active unit!
  - This Interception Attack happens when:
    - The active unit enters the stationary unit's visibility and firing range
    - The active unit exits the stationary unit's visibility (or firing range, if that is shorter)
    - The active unit ends its action within the stationary unit's visibility
  - Once the stationary unit has fired on the active unit, the stationary unit will turn its facing to follow the active unit
  - In an Interception Attack half of the normal shots are fired (rounded up)
  - If both the active unit and the stationary unit wish to fire at the same time, the active unit always shoots first
Constructing the Prototype: Rules
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- Capturing Control Points
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- If the player captures all three Control Points, she wins!
Constructing the Prototype: GM Strategy
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  - Take notes about which strategies work well to provide a fun, challenging experience for the player
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- More on testing in Chapter 10, "Game Testing"
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      - With 10 shots, it is much more likely that you will get close to the average damage of the gun at that distance (5 points)
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  - These are easy questions to answer with a paper prototype
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  - Fine-tune this information later with the digital prototype
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    - Gamepad controllers / Touchscreens / Keyboard and Mouse / etc.
  - Only a digital prototype can test the actual physical interface that will be used by the player
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- Next Chapter:
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  - The next chapter covers several different types of game testing and shows you how to run them