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**INTRODUCTION**

*High Concept*

A side scrolling shooter where you choose from several magical elements to combat a wide range of enemies of varying abilities.

*Game Overview*

Players try to survive through the challenges the level designers have concocted -- but whether that means blasting everything in sight, gracefully avoiding all harm, or getting up close and personal for melee combat is up to each player. All of these approaches and more are available -- it all depends on which Elements the player elects to equip at the outset.

Each equipped Element is mapped to one of the four action buttons. Some Elemental abilities are activated each time the respective action button is tapped, other abilities are invoked by charging the action button for a period of time and then releasing the button, and still others have latent abilities that are continuously active while in that Elemental form. Whenever an action button corresponding to a non-active Element is pressed, the player's ship undergoes a rapid transformation to the respective Elemental form.

The action unfolds on a 2d plane corresponding to the monitor's screen, with players able to move in any of the eight cardinal directions. Even though the gameplay is entirely 2d, the world scrolls by in full 3d as prescribed by the level designers. Players have no control over this progression; once the game has been started, it will inexorably progress toward the final battle. The players must survive through all the threats on each level, given only periodic opportunities to choose a new combination of Elements. At each of these spots, hints are given as to what challenge lies on the horizon.

The player ships and the enemy ships both have a certain amount of health which is decreased when they are struck by a harmful object; at zero health a ship is destroyed. Unlike many games of this ilk, ships can collide with one another, possibly causing damage to each other. Damage from a ship-ship collision depends on the outer structure of the ships (for example, a ship could be covered in sharp blades) as well as the speed of the collision. Enemy projectiles also can cause damage to other enemies, making it possible for enemies to shoot one another. On the other hand, the player ships can not damage each other; a player generated projectile will never adversely affect another player, nor will collisions between players be damaging.

One or two players can fly on screen simultaneously, with each player being able to choose his or her own selection of Elements. The players are given a number of extra lives to complete the game; when two players play together they must share these lives in a joint effort to survive to the end.
Control Scheme

Catalyst's control scheme is based around a Super Nintendo style controller with analogue axes. The player can move in the eight cardinal directions by pressing the corresponding direction on the pad. The farther the axes is pressed, the faster the ship moves in that direction; with maximum velocity occurring at the extent of the axes. If the player can only use digital axes (for example, with the keyboard), pressing the appropriate direction causes the ship to move in the appropriate direction at maximum velocity.

Each element is mapped to one of the four action buttons. Pressing an Element's action button causes the ship to transform into that Elemental form, if the ship is not already in that form. Each Element uses one or more of three control schemes: Tap, Hold, or Charge. An Element that uses the Tap scheme performs its action each time the corresponding button is pressed, an Element that uses the Hold scheme performs its action while the button is held down, and an Element that uses the Charge scheme performs its action when the corresponding button is released, with power relative to the time the button was held down. Additionally, some Elements have innate abilities that are always active as long as the player stays in that elemental form.

The player has the ability to, at any time, pause the game and configure any of the movement buttons or the action buttons.

Sample Turn

Dave starts up Catalyst and chooses the four elements that sound the most interesting to him: Fire, Air, Water, and Chaos. Having chosen his four elements, Dave starts the first level.

The first wave of enemies appears on the right edge of the screen. These enemies are just flying in simple sinusoidal patterns, allowing Dave to easily destroy them all using Fire's Flaming Spread. The next wave proves to be more difficult, with the enemies intelligently dodging each Fire attack instead of stupidly wandering into them. They are also all shooting back, making it near impossible for Dave to not get hit. Quickly, Dave goes over his available options and decides that evasion would be the best tactic. He decides to use Water's Bubble Shield to generate a safe zone behind the bubble to aid in avoiding all the shots. Dave charges up the shield as far as he can without getting hit, then releases the medium-sized bubble and hides behind it.

Eventually these enemies eventually just fly away, going off after a more interesting target. Replacing them is something much worse -- a moving city with a nearly endless supply of little soldiers coming out and attacking. There's way too many to use Fire or Water effectively, so Dave decides to try something a little different. Combining Air's additional speed with Chaos's club, Dave thinks he can dodge most of the shots while knocking all the soldiers into each other. But will it work?
**Competition**

Shoot-em-ups are no longer as popular as they were in the mid 90s; now everybody is playing First Person Shooter, Massively Multiple Online, and Sports games. Competition has become for the number one shoot-em-up slot, won by the game that adds the most involving concept. Two shoot-em-ups have been recently released and one is currently finishing development. These three games would be the main competition for *Catalyst*.

**Ikaruga**

*(Released 09/05/02 for Sega Dreamcast, 04/15/03 for Nintendo GameCube)*

The spiritual sequel to what is often considered the "best shoot-em-up ever", *Radiant Silvergun*, *Ikaruga* is yet another gem made by Treasure. *Ikaruga*'s addition to the shoot-em-up genre is its polarity system, which allows the player to absorb all projectile of the same color as the ship instead of getting killed by them. This small addition made *Ikaruga* the most highly acclaimed shoot-em-up in the past four years.

**GigaWing 2**

*(Released 05/16/01 for Sega Dreamcast)*

*GigaWing 2* is the sequel to the cult favorite *GigaWing*. *GigaWing 2* had two features distinguishing it from a plain shoot-em-up: six player simultaneous play and the reflect barrier. *GigaWing 2* has tons of bullets on screen at one, and the only way a player can survive through the onslaught is to use the reflect barrier to absorb all the bullets while moving through them. Unfortunately for *GigaWing*, people found the game either way too easy or way too hard, so it did not sell extremely well.

**R-Type Final**

*(to be released 12/31/2003 for PlayStation 2)*

The next big shoot-em-up to get released is the most recent release in one of the oldest shoot-em-up series, *R-Type*. *R-Type Final* is not extremely well known to many shoot-em-up fans because it doesn't add much substantial to the shoot-em-up experience. *R-Type Final*’s biggest feature is the sheer amount of ships they have; over 100 different ships are available in the game. Sadly, the ships all have very small differences, for example one ship is *slightly* faster than the average ship while being *slightly* weaker than the average ship. Not giving the players raw stats to muck around with will severely hurt *R-Type Final*. 
Like *Ikaruga* and *GigaWing 2*, *Catalyst* is designed with the shoot-em-up experience as a core, but with one special feature -- the customizability of the ship. This brings the same appeal found in collectible card games such as Magic: The Gathering, with every person able to build a ship to their own tastes. Potentially, expansions could be released that add new Elements, new levels, and / or new enemies to the game, creating near infinite replay value.

**Target Audience**

*Catalyst* will appeal to a wide variety of demographics, due to the interactions between the elements and the intelligent AI. Each play through, players can select different powers and try to fight the enemies with those elements. However, certain gamers will enjoy *Catalyst*'s complex elemental-enemy interactions more than others.

A twitch gamer will enjoy using purely reactive Elements, activating the powers as required. For example, with both the Fire element and Metal element equipped, a twitch gamer will be constantly switching between these elements in a frenetic fashion. This completely reactive gameplay is what a twitch gamer enjoys, as each play through is a uniquely stimulating experience.

The slower paced gamer will enjoy creating nifty combos between different elemental abilities. Combining Metal's Shining Sword with Gravity's Black Hole creates a new synergistic game play style, with the player pulling enemies inward and then dealing high amounts of damage with the Shining Sword. Finding all the ways to combine the Elements into a greater weapon will be near impossible with the unpredictable enemies, driving the combo gamer to find new, more powerful selections.

To facilitate its wide appeal, *Catalyst* will have only minimal graphical violence. We expect it to get an E rating, with the most violent aspect being killing the little, low detail, humanoid soldiers on the ground. All other violence is even more detached from reality.

**Target Platform**

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<thead>
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<tr>
<td><strong>CPU</strong></td>
<td>Pentium 3, 733 MHz</td>
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<tr>
<td><strong>Graphics Card</strong></td>
<td>DirectX 7 / OpenGL 1.3 compliant (For example, a GeForce 2 Ti)</td>
</tr>
<tr>
<td><strong>RAM</strong></td>
<td>256 MB RAM</td>
</tr>
<tr>
<td><strong>Disk Space</strong></td>
<td>200 MB free disk space</td>
</tr>
<tr>
<td><strong>Input</strong></td>
<td>101-key keyboard, Mouse</td>
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**Development Team**

*Catalyst* is programmed and designed by odd Man out with art coming from Back Pocket.

<table>
<thead>
<tr>
<th>Employee</th>
<th>Responsibility</th>
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<tr>
<td>Russel Aasland (odd Man out)</td>
<td>Technical Director</td>
</tr>
<tr>
<td>Chad Bartlett (Back Pocket)</td>
<td>Lead Artist</td>
</tr>
<tr>
<td>Jess Bates (Back Pocket)</td>
<td>Artist</td>
</tr>
<tr>
<td>M Jared Finder (odd Man out)</td>
<td>Designer</td>
</tr>
<tr>
<td>Nathan Frost (odd Man out)</td>
<td>Producer</td>
</tr>
<tr>
<td>Calin Matney (Back Pocket)</td>
<td>Artist</td>
</tr>
<tr>
<td>Jason Rost (Back Pocket)</td>
<td>Artist</td>
</tr>
<tr>
<td>Austin Spafford (odd Man out)</td>
<td>Art Director / Product Manager</td>
</tr>
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GAME MECHANICS

Game Flow

Players are given a number of extra lives to complete the game. When two players work together, they share these "extra lives" in their joint effort to survive to the end. Players progress through the four levels in order, entirely completing each level before progressing to the next one.

Players are given periodic opportunities to change their elemental abilities, with hints given to what elements will prove the most useful for the next area. Outside of at the beginning of the game and at these points, players cannot change their selected elements in any fashion.

Each of the four levels has an underlying theme that permeates through its design. The first level will feel extremely optimistic, occurring in a rolling green valley with the sun shining brightly down. There will be no danger of the player harming himself by colliding with the terrain, nor will the enemies present any real threat. The second level will be much more cramped than the first, with the player's movement constrained significantly. This level will be primarily in a mossy underground cave lit by a magical glow.

Starting with the third level, the game's difficulty gets "kicked up a notch." While the enemies in the third level are roughly equivalent to the second level's, the background obstacles now present a significant threat. Occurring inside an active volcano, the player will need split second timing to avoid the spontaneous lava spurts and the falling stalactites. At the fourth level, the background no longer presents significant obstacles any more; instead the enemies do! The enemies inside this crystal cave will be numerous and intelligent. The player must use all the skills he's learned up to this time to complete this level.

Game Objects

The camera movement, the enemy spawn points, and the collidable terrain of each level are static, but the actions of the player and the enemies in this predetermined world is not. The following properties are shared between all dynamic objects and in the case of the player, will be the same regardless of which Element is being used.

**Mass**

How hard it is to move the Object. Enemies' masses can widely vary, with big bosses being extremely massive.

**Shape**

A representation of the interactive bounds. Only when two object's shapes overlap do they actually touch each other, no matter what is displayed on screen. All shapes will be simple and rigid; no deformation can happen to an Object's shape.
Max Health  How much damage an Object can take before being destroyed.

Player Elements
Sixteen different elements are currently designed. Elements use control schemes as described previously. Elements have no effect on the players' maximum health nor their current health. The following descriptions are intended to convey the concept of each element.

Earth  (Shotgun)
Charge and release to shoot a large number of damaging rocks with an initial forward velocity dependent on the charge time.

Fire  (Flame Spread)
Hold to shoot flaming projectiles in three or more fixed directions. Has a high rate of fire, but individual projectiles would deal small amounts of damage.

Air  (Slipstream)
Innate ability of having an attractive field following the ship where it's power is dependent on the ship's velocity. As the ship moves faster, the field becomes stronger, causing light enemies and projectiles to be pulled in behind the ship as it flies past them.
While holding, the ship accelerates faster than normal with a higher maximum velocity.

Activating Slipstream

**Water (Bubble Shield)**

Press to activate a small Bubble Shield, which lasts for an instant.

Charge and release to release a persistent Bubble Shield at the player's position with initial health dependent on charge time. As the persistent Bubble Shield collides with enemy projectiles, it takes damage until it is destroyed. Has no effect on player movement; players can freely move through it.

**Bubble Shield**

**Chaos (Chaotic Club)**

When the button is not pressed, the club is stored at its front extent. Press to swing to the rear extent and release to swing it back to the front extent. Any enemies or projectiles that collide with the club as it is moving are dealt a moderate amount of damage and imparted with a high velocity.
Order  (Wavefront)

Charge and release to launch a pressure wave across the screen with initial health proportional to the charge time. As the wave goes across the screen, it deflects any projectiles that collide with it, losing an amount of health dependent on circumstances of the collision. The wave also loses small amount of health just by traveling across the screen. The wave will terminate when it hits an enemy, using the rest of its health to damage an enemy and impart velocity on it, with damage and velocity dependent on remaining health.

Deflecting Projectiles

Light  (Guided Laser)

Press to fire a laser. While the button is held, the laser will change direction to move in the same direction as the player. Releasing yields control of the laser and it continues to move in whatever direction it is currently going. The laser would travel at a moderate velocity to give the play the ability to control it effectively and would deal a moderate amount of damage on impact.
Guiding the Laser

**Void** (Void Trail)

Innate ability of generating a Void Trail that follows the ship's previous positions. Any enemy that touches the Void Trail takes a little damage. If the trail ever crosses over itself, the enclosed area becomes Void and deals a large amount of damage to enemies in it, and then the trail resets to following the player. The Void Trail also dissipates with time so that if the player sits in one position, the trail would eventually disappear.

Press to activate the Artificial Booster, which directly sets the ship's velocity to higher than normal. The Artificial Booster also allows the player to generate a long trail and to enclose the trail on larger or quicker moving enemies.

*Damaging an Enemy by Closing the Trail*

**Time** (Temporal Distortion)

Innate ability of generating a time bubble that surrounds the player. All enemies and projectiles inside the bubble are slowed down.

Time has no press, hold, or charge abilities.
Electricity (Chain Lightning)

Charge and release to shoot a lightning bolt that leaps from the ship at a high speed towards the closest enemy, dealing damage proportional to the charge time. If the lightning bolt kills the first enemy it struck, it then leaps to the next nearest enemy, carrying over any not dealt. If multiple enemies are the same distance away, the bolt splits evenly between them.

Gravity (Black Hole)

Charge and release to spawn a Black Hole with duration relative to the time charged. This black hole exerts an large attractive force on all enemies and projectiles. As the black hole is charged up, enemies and projectiles are pulled towards the player. Two options are being considered for the placement of a black hole:

1. When the charge is released, the Black Hole is shot away from the ship, stopping when it hits something, or reaches some specified distance.
2. When the charge is released, the Black Hole is placed at the current position of the ship.
**Gravity Bomb**

**Crystal (Explosive Shards)**

Hold to fire a stream of explosives that stick to enemies.

Release to detonate all explosives in small explosions. Nearby explosions combine to generate bigger explosions. The explosives will stick to an enemy until detonated or the player switches elements (in which case they detonate).

---

**Spirit (Homing Volley)**

Press and hold to create a volley of homing missiles. As the Element charges, a missile is created that deals a small amount of damage. The longer the Element charges, the more damage the missile will do to its target. When the missile has reached the most damage that it can deal, a moderate amount, the cycle repeats with a new missile. When the entire volley (about 10 missiles) has been charged, or the button is released, the missiles are launched and they independently track and pursue their targets.
A Homing Volley

Technology (Buzz Kill)

While in the Technology form, the ship becomes an omni-directional buzz saw. Hold the button to rev up the buzz saw to higher rotational velocities. The longer the player holds the button, the faster the buzz saw rotates and the more damage it will deal. Also, as the buzz saw spins faster, the player loses acceleration, making it harder to maneuver.

Attacking with Technology

Metal (Shining Sword)

While the button is held or released, the sword is stored at its maximum extents. At these extents, the sword deflects projectiles that hit it. When the button is pressed or released, the sword swings over to the appropriate extent, dealing damage to any enemy that collides with it while swinging.

Reflecting Shots

Attacking

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Wood (Grabby Vine)

When the button is pressed, a vine shoots outward, in the ship's current direction of movement. As long as the button is held the vine reorients itself to be along the ship's direction of movement.

If the vine hits an enemy, it becomes a weighted rope moving around the screen based on both the player's movement and the ensnared enemy's struggling.

When the button is released, the vine lets go of the enemy (if one is currently ensnared) and is quickly retracted. A released enemy is paralyzed for a moment or two before regaining control of its physical facilities.

Grabbing an Enemy

Swinging an Enemy

Enemies

All enemies have a certain amount of starting health, some mass, one or more weak points where they will take damage if struck by something harmful, and own AI movement style. Additionally, each enemy can optionally carry one or more weapons and shields.

Weapons

Enemies have one or more weapons, with each weapon having a firing arc that affects what range of directions the weapon can be fired. Enemies can have any of the following weapons.

Player Elements

Enemies should be able to use all of the player's elements.
Mines
A simple projectile that travels in a straight line at a designer-specified velocity (possible zero).

Bouncy Laser
When a Bouncy Laser projectile strikes a target, it will deal some damage and then reflect off in a well defined way.

\[\text{Bouncing Off of a Player}\]

Force Perturbation
Instead of shooting out projectiles, an enemy with a Force Perturbation attack shoots out forces that modify the velocity of other ships or projectiles.

Grappling Hook
When a Grappling Hook collides with an enemy or player, it becomes a rope or rod attaching the shooter and the collided object. This rope would then act similarly to a Grabby Vine.

Rail Gun
The enemy fires an beam instantaneously across the entire screen that deals damage to the first thing that it hits.

\[\text{Missed Rail Shot} \quad \text{Hit!}\]

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Stabbing Melee

The enemy attacks with a short-range melee weapon, similar to the Chaotic Club or Shining Sword. Unlike the Chaotic Club or Shining Sword, a Stabbing Melee weapon attacks in one direction at a time, extending from the attacker in that direction and then being retracted.

Healing

Any nearby ship regains health. This can also be a projectile that must collide with the potential patient.

Teleportation

The enemy teleports to another location on the screen. This can happen when the Enemy is about to be damaged in addition to at the enemy's request. The enemy will reappear in a random position on the screen or at a position specified by the enemy.

Each weapon can also have one or more flags that modify how the weapon acts.

Gravity Affected

The projectile's motion is affected by gravity, making it constantly accelerate downward.

Intersection Events

When the projectile intersects with another projectile of the same type, it dramatically harms a player at the position of intersection.

Event on Death

When the enemy is destroyed, it will do something supported by the engine (i.e. drop a Black Hole, spawn more enemies at that position, etc.).

Fragmentation

When the projectile strikes a player or enemy, it explodes, throwing out lots of little mines affected by gravity.
AI Movement Styles

Each enemy has one of the following AI motion styles, or a specialized method of movement for bosses. All the listed styles can happen in world-space or in local-space.

Path Bounded

The enemy is restricted to move along a spline at a speed as designed by the level designer and may not move away from this spline. The spline and speed is specified at level creation time.

Path Bounded w/ Perturbation

The same as Path bounded, except the enemy may deviate a small amount as specified by the level designer. This is useful to make enemies dodge projectiles, for example.

Area Bounded

The enemy is confined to a convex area defined by the level designer. The enemy may move freely within this area, but may not leave it.

Fixed

The enemy is fixed at a location and can only rotate.

Additionally, there is an optional flag that modifies the way an enemy can move.

Affected By Gravity

The enemy can move as specified by the motion style, but is affected by gravity and so will always be accelerating towards the source of gravity. Therefore, such an enemy is implicitly limited to a distance away from the ground equal to its maximum jump height.

Any enemy that can move itself can modify its linear and rotational velocity in one of two ways.
Linear Set Velocity
The enemy can change its direction and speed as it wants by setting its linear velocity.

Linear Acceleration Based
The enemy can change its direction and speed only by setting an acceleration vector.

Rotational Set Velocity
The enemy can change its rotation angle as it wants by setting its linear velocity.

Rotational Acceleration Based
The enemy can change its rotation angle only by setting an acceleration vector.

Targeting
A targeting style is the method that the AI uses to govern its movement and targeting habits. Every enemy with a projectile weapon must have a targeting style specified by the level designer.

Predetermined
An enemy with a predetermined shooting pattern mechanically repeats the designed shooting pattern until destroyed.

Vector
Vector targeting has the AI shoot directly at the position the player is currently at, with no form of prediction.

Lead targeting
Lead targeting allows the AI to take movement of the enemies and players when choosing a direction to shoot.

Lobbed
With lobbed targeting the AI can take gravity into consideration when shooting a projectile affected by gravity.

Homing
Homing targeting permits the AI to consider that projectiles will follow a non-deterministic path. This will allow the AI to fire a projectile away from the player knowing that the projectile will turn and pursue its target.

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Shields

An shield exists on some arc around the enemy ship. This arc can be anything from a complete circle to a single point.

Absorption

When a projectile hits an Absorption shield, the projectile is destroyed and deals no damage.

Reflection

When a projectile hits a Reflection shield, the projectile's path is reflected, much like the Shining Sword.

Damaging

Projectiles do not collide with a Damaging shield — they instead pass through it and hit the shield bearer. If the shield collides with another ship along the shield's arc, a small amount of damage is done to the struck ship.

Deflection

Projectiles do not collide with the deflection shield, but instead the path of the projectile is deflected away from the shield as it approaches. How the projectile is deflected away depends on how the projectile approaches the shield.
Bumper

When a projectile hits the shield, the projectile is destroyed and the damage the projectile would have dealt is converted into kinetic energy applied to the shield bearer.

Colliding With a Projectile

Colliding With a Ship

There are also multiple flags that a shield can have.

Special Attack

The shield charges up as the shield performs its action or as time passes. When the shield charge reaches max, it performs a special action, such as shooting a powerful beam. The actions it could support would be restricted to actions that projectiles or weapons are able to do.

Degrades with Damage

When a harmful object strikes a shield that degrades, the shield loses some energy, dependent on the damage that is dealt.

Destructible

When the shield reaches no charge, the shield stops functioning, possibly being completely destroyed.
Mentality

Mentality allows each enemy to have a different play style by modifying the aggressiveness of the AI. At one extreme is a kamikaze mentality, where the enemy is completely uncaring of its own well being; at the other end is a coward mentality, where the enemy will attempt to preserve itself above all else. Other mentalities are on a continuous spectrum between these two extremes.

Level Design

A level camera has six degrees of freedom -- it can follow an arbitrary 3d path through the world at an arbitrary velocity, acceleration, rotational velocity, and rotational acceleration. The 3d path can have loops that, once a condition is reached (such as beating a mid-boss), will "break" the loop, allowing the camera to continue on the larger path. Each level can have collidable areas, such as walls and ceilings, which no object can pass through. Some areas, such as spikes, would deal damage to objects that collide with them.

Enemies can be created and placed throughout a level. Enemy creation may be conditional. Any segment of a level that requires one or more enemies to be dispatched before the player may continue has an associated Level Timer set by the level designer. The Level Timer counts down, and when it reaches zero, the enemies leave in some way, allowing the player to proceed even if he elected to take no offensive elements.

Triggers can be defined, such as the tripping of a tripwire, the pressing of a button, or the destruction of an enemy, that activate some other event such as the spawning of new enemies or a jailbreak of freed prisoners. The playing of arbitrary sound and the displaying of arbitrary 2d graphics or text on the HUD are also available to level designers.
ART REQUIREMENTS

Setting

_Catalyst_ takes place in a world of 19th century technology infused with a healthy dose of magical sorcery. Mechanical engineering is firmly in the steam age, giving rise to wind-powered grainaries, waterwheel generated household electricity, steam-driven trains and coal-powered machines of war. At the same time, sorcery is often used to augment the otherwise mundane capabilities of the indigenous civilization, providing magical flight, combat shields of pure energy, enchanted cannons of mass destruction, and thaumaturgic medieval weaponry.

Dragons, hydras, unicorns, gargoyles, and other, even more fantastic creatures are entirely at home in _Catalyst_, and are sometimes harnessed as beasts of burden or steeds of battle. However, the countryside is still largely dominated by the indigenous civilization’s elegant, minimalistic architecture – simple, functional buildings made of metal, brick and wood. The more mundane sights of the indigenous civilization are generally simplified versions of what actually existed in the 19th century – nothing flashy or complex. By comparison, the magical elements of the world are, almost without exception, dazzling, transparent, reflective – flashy and impressive.

The good guys generally consist of biomorphic, curvilinear, legato forms, with smooth color gradients from light brown to light green. Some bad guys have warped and twisted variants on the good guys’ forms, whereas other bad guys have staccato, mathematical forms, with harsh contrast in color schemes.

Asset Requirements

Game Shell Art
- Team logo
- Game logo
- Title screen background
- Shell font
- The menu graphics (buttons, transitions, etc.) will be done procedurally.

In Game Art

Diagrams are drawn to give a sense of scale. The screen will be 20 boxes wide and 15 boxes high.

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**Small Explosion**

**Medium Explosion**

**Large Explosion**

*Enemy Bullet / Earth's Small Rocks / Fire's Flame Spread*  
*Crystal's Explosive*
Chaos's Chaotic Club

Order's Wavefront

Metal's Shining Sword

Water's Bubble Shield

Gravity's Black Hole

Wood's Grabbly Vine

Regular Missile

Turret with 270 Degrees of Rotation
Grenade

Floating Mine

Stabbing Melee Weapon

Spiked Shield

Swarmer Hive

“Joe Enemy”

Swarmer

Ground Soldier
(with animations for standing, running, jumping, and ducking for cover)
The following will all be procedural (i.e. generated at runtime) and only require minimal art.

- Snaking Laser Beam
- Whirling Slipstream
- Rail Beam
- Perturbation Attack
- Teleportation Effect
- Healing Effect
- Fireworks
- Void Trail
- Time Bubble
• Chain Lightning
• Gravity Charging
• Arc Shield
• Grappling Hook
• Trip Wire

We will also need a skybox for display around the game field.

Max Polygon Counts

• 800 to 1000 triangles per Elemental form
• 300 to 600 triangles per non-boss enemy
• Less than 300 triangles per small, non-boss enemy
• 1000 to 1200 triangles per boss enemy
• Textured quads for most projectiles
• 50 triangles per tile when the level has a near-infinite view distance.
• 500 triangles per tile when the view is obscured, for example the level occurs inside a cave.
Every state in the Game Shell (with the exception of Battle) is navigated by selecting options on a radial menu, like in The Sims. The radial menus' options can be manipulated with the mouse (by moving the cursor over the desired option and clicking) or with the keyboard input (by pressing in the appropriate direction and pressing an action button). For more info on radial menus, see http://www.piemenus.com.

**Intro Sequence**

The Intro Sequence is a short movie that advertises the setting, characters, and story of *Catalyst*.

**Title Screen**

The Title Screen shows the game logo, team logo, and credits. After waiting at the title screen for some amount of time, the game returns to the Intro Sequence.

**Main Menu**

The Main Menu gives all available options: start the game, start training, high scores, configuration, extras (such as high scores), and quit to the OS.

**Key Configuration**

At Key Configuration the player can assign keys, either on the keyboard or on an attached game pad to game actions.

**High Scores**

The player can view previous high scores.
Choose Elements

Choose Elements allows the player to select four elements, one for each action button, from the set of sixteen Elements.

Battle

Battle denotes the game proper and will have a minimal set of configuration options (i.e. key bindings, sound levels, some graphical controls, etc) while the game is paused.
INTERNATIONALIZATION

Being a shooter, Catalyst has minimal amounts of text in game. Only well known words would be used, such as "Score", "Lives", and "Pause". The only place text would be required to be changed for localization is in the Shell, which should have its own font and its own menu description for each language. To aid in platform portability, file names will be all lower case letters and underscores; no spaces, dollar symbols, or other special characters are allowed.
BUDGET

All the following software will be required to create Catalyst. To minimize costs, we have chosen to use Free Software whenever possible as long as the license is permissible. The total cost to create Catalyst will be approximately $240,000.

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<th>Name</th>
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**Software Costs**

$26,300.00

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<tr>
<td>Producer</td>
<td>Nathan Frost</td>
<td>$65000.00 / year</td>
<td>8 months</td>
<td>$43,333.33</td>
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<tr>
<td>Designer</td>
<td>M Jared Finder</td>
<td>$50000.00 / year</td>
<td>8 months</td>
<td>$33,333.33</td>
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<tr>
<td>Product Manager</td>
<td>Austin Spafford</td>
<td>$45000.00 / year</td>
<td>8 months</td>
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<tr>
<td>Technical Director</td>
<td>Russell Aasland</td>
<td>$60000.00 / year</td>
<td>8 months</td>
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<tr>
<td>Lead Artist</td>
<td>Chad Bartlett</td>
<td>$60000.00 / year</td>
<td>4 months</td>
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</tr>
<tr>
<td>Artist</td>
<td>Jess Bates</td>
<td>$55000.00 / year</td>
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<td>$16,041.67</td>
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<tr>
<td>Artist</td>
<td>Calin Matney</td>
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</tr>
<tr>
<td>Artist</td>
<td>Jason Rost</td>
<td>$55000.00 / year</td>
<td>4 months</td>
<td>$16,041.67</td>
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</table>

**Personnel Costs**

$212,291.67
**VERSION CHANGES**

**Version 1.0** *(2003 / 07 / 18)*

The initial version of the Catalyst Game Design Document. The core game design, with player abilities and enemy abilities is finalized at this point.

**Version 1.1** *(2003 / 09 / 23)*

The first update to Catalyst's GDD, version 1.1 adds one section that was not agreed upon previously – artistic style. All of the art required by Catalyst will be developed by the art team Back Pocket, who has joined odd Man out in the development of Catalyst. This version has no effect on anything stated in previous versions; it only adds content to the Game Design Document.

The artistic style is “Magical Steampunk”, a crossbreeding between 19th century technology and sorcery. Good guys consist of biomorphic, legato forms, with smooth color gradients from light brown to light green. Bad guys can have warped and twisted variants on the good guys’ forms or mathematical forms with harsh contrast in color schemes.

**Version 1.2** *(2003 / 09 / 29)*

Version 1.2 is mainly a clarification update; it adds specifics to places where 1.1 was ambiguous. The major changes from version 1.1 to 1.2 are the addition of the Game Objects section, which groups common concepts among the enemies, players, and projectiles in one section; and the addition of actual level descriptions for each of the four levels. Previously, Catalyst had four levels in a rough order equivalent to the finalized order, but no setting was specified. Now each of the four levels has an explicit setting in addition to its order.

**Version 1.2.1** *(2003 / 10 / 21)*

Version 1.2.1 mainly a clarification update; it adds modifications based on responses from Michael Moore. The most significant changes are the removal of references to the existence of bosses as well as the addition of relative scales for the player Elements. Minor changes to wordings for clarification as well as grammar and typo changes.
TEAM SIGN OFF

Russell Aasland

Chad Bartlett

Jess Bates

M Jared Finder

Nathan Frost

Calin Matney

Jason Rost

Austin Spafford