

## Particle Systems

Because sparks look so neat.

# BACKGROUND

- Particle systems can be used to simulate:
  - Explosions, Fireworks, Sparks
  - Fire, Smoke
  - Rain, Snow
  - Etc.
- So they're a rather versatile visual tool
- Still, they're not required for successful game business (TellTaleGames)

# BASIC IDEA

- Particle systems define behavior for particles.
  - All particles have the same behavior.
- Initial particle parameters vary.

# EXAMPLE

- Rain:
  - All drops fall down based on gravity.
  - All drops may move around based on changing wind.
  - All drops, when they hit geometry, disappear (possibly making geometry wet).

# EXAMPLE

- Smoke:
  - All puffs drift upwards.
  - All puffs may move around based on changing wind.
  - All puffs fade in time until they vanish
  - (May rotate, grow bigger in time, etc)

# EXAMPLE

- Sparks:
  - All sparks obey gravity
  - All sparks bounce when they hit geometry
  - All sparks fade in time until they vanish

# IMPLEMENTATION

- Structure containing needed information
  - Position, rotation, size, color, age
- Method to process a physics iteration
  - Defines the actual behavior
- Method to generate a particle
  - Initial parameters depend on the desired effect
- Linked list possible, but in practise a linear array is good enough
  - Randomize used slot, skip generation if full