Motivation

Choreographers need to keep track of:

- position
- orientation
- movement direction

of dancers and groups of dancers
Difficult to visualize shape and motion simultaneously
How can choreographers...

• Encode routines with shapes and movement through time
• Fix formation problems prior to teaching (eg: detect dancer collisions)
• Teach complex formations to individual dancers
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td><strong>Pinwheel (1): First set of outside turns</strong></td>
<td><strong>Pinwheel (2): First dips</strong></td>
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<td>Arrows indicate direction men face</td>
<td>Men backing, couples 1 and 2 travel LD, couples 3 and 4 BLD</td>
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- Pinwheel (3): Reverse Pinwheel
  - Note for transition from first dips to reverse pinwheel:
    - Couples 1 and 2 pass on the inside of couples 3 and 4

- Pinwheel (4): Final dips
  - Transition with men backing on their R foot, then L waltz
Recombination: Forming the Solar System
Current Attempts (PPT)
Formation Creation Software

Field Artist

GUI app for marching bands

Formations Elite

Targeted for bands, show choirs, dance teams, and general staging
Formation Creation Software

Dance Formations

Choreo Maker
Our Solution

Create an API for choreographers to programmatically encode their choreography and display it as a live animation

- Iterative development of choreography
- Instantaneous playback for error checking and review
- Abstraction of choreography into geometric shapes: 
  \[\text{arcs, circles, lines}\]
- Grouping of dancers by formations
- Interpolated transitions between formations
Approach  (rough mock-up)

```javascript
var dancers = [];

for (var i = 0; i < 10; i++) {
    dancers.push(new dancevis.Dancer());
}

var groupOptions = {
    shape: new dancevis.Shapes.Circle({
        center: new dancevis.Position(),
        radius: 200})
}

var group = new dancevis.Group(groupOptions);
group.addDancer(dancer);

var endtime = new dancevis.Time({ minutes: 2 });
group.setEndCondition(function() { return this.time.equal(endtime) });

dancevis.Start();```
Questions

• Have you come across any tools that solve a similar problem?
• How would you like to interact with an animation of choreography (ex: select individual dancers, trace by formation, etc)?
• Would it be useful to provide library functions for transitions between formations or let the client specify them (or both)?
• Do you see this as being more effective for communicating or developing choreography and why?