

Introduction to

Graphics::Primitive

Documents, Graphics, Charts and More

Cory G Watson: 'gphat'

- Infinity Interactive - iinteractive.com
- Catalyst, DBIx::Class, Chart::Clicker
- <http://www.onemogin.com/blog>

Goals

- document creation
- output agnostic
- reusable
- embeddable

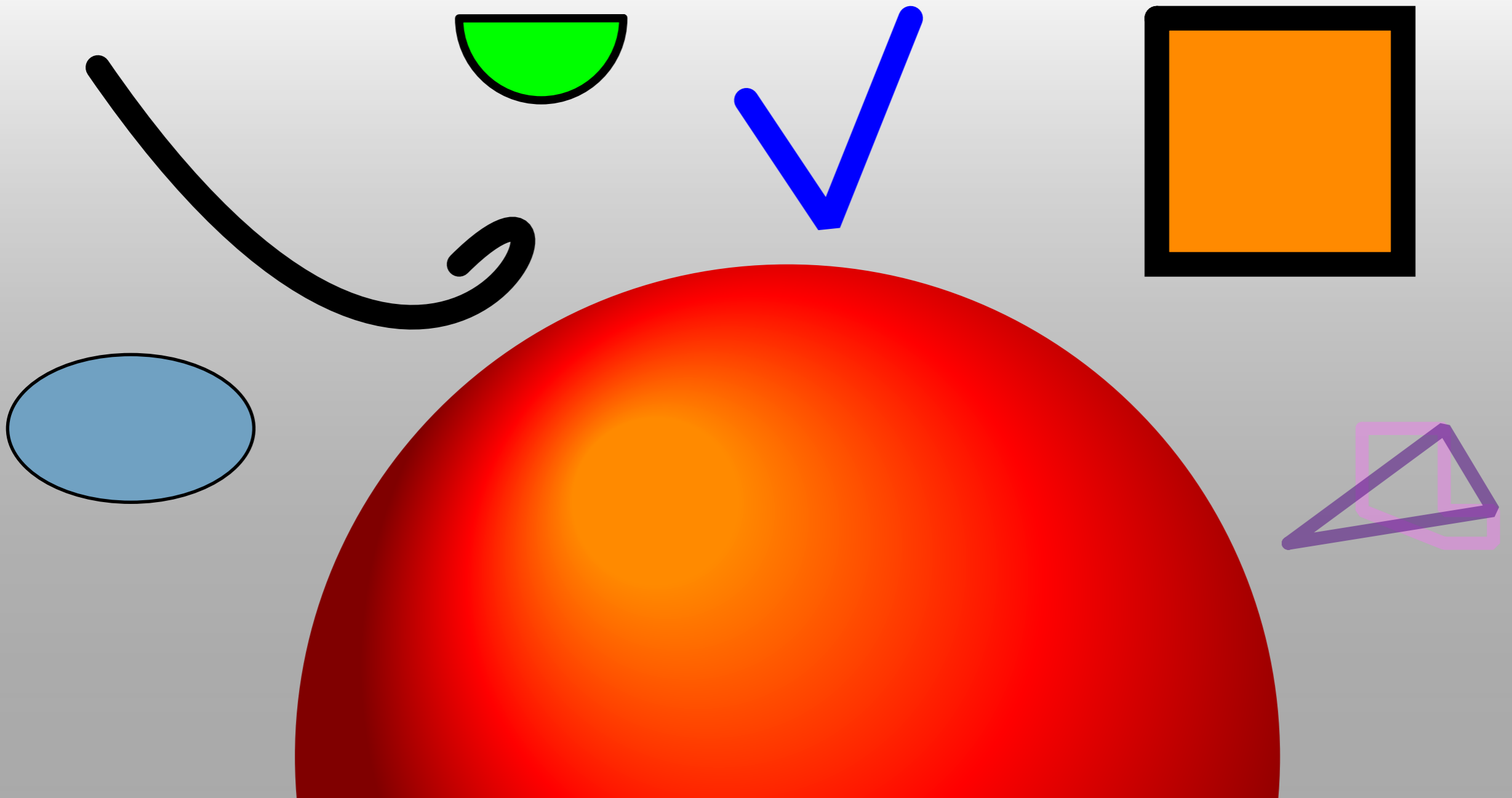
What Is It?

- scene graph
- intermediary representation
- graphics toolkit

What can it do?

Make this presentation.

Graphics Toolkit



Implement Old Formats



RIP converter (by Brian Cassidy)

Fancy Page Layout

Page One

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Page Two

Տարբեր ժամանակաշրջաններում երկրաշարժերի առաջացումը բացատրվել է տվյալ ժամանակներում ընդունված պատկերացումների համաձայն և հիմնականում կապվել է տարատեսակ կենդանիների շարժումների հետ

とは、普段は固着している地下の岩盤が、一定の部分を境目にして、急にずれ動くこと。また、それによって引き起こされる地面の振動。正確には、前者を「地震（じしん）」と呼び、後者を「地震動（じしんどう）」という。一般にはどちらも地震と呼ぶ。通常は地震という地震動を意味することが多い。

подземные удары и колебания поверхности Земли, вызванные естественными причинами (главным образом тектоническими процессами) или искусственными процессами (взрывы, заполнение водохранилищ, обрушением подземных полостей горных выработок).

Page Three

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Charts

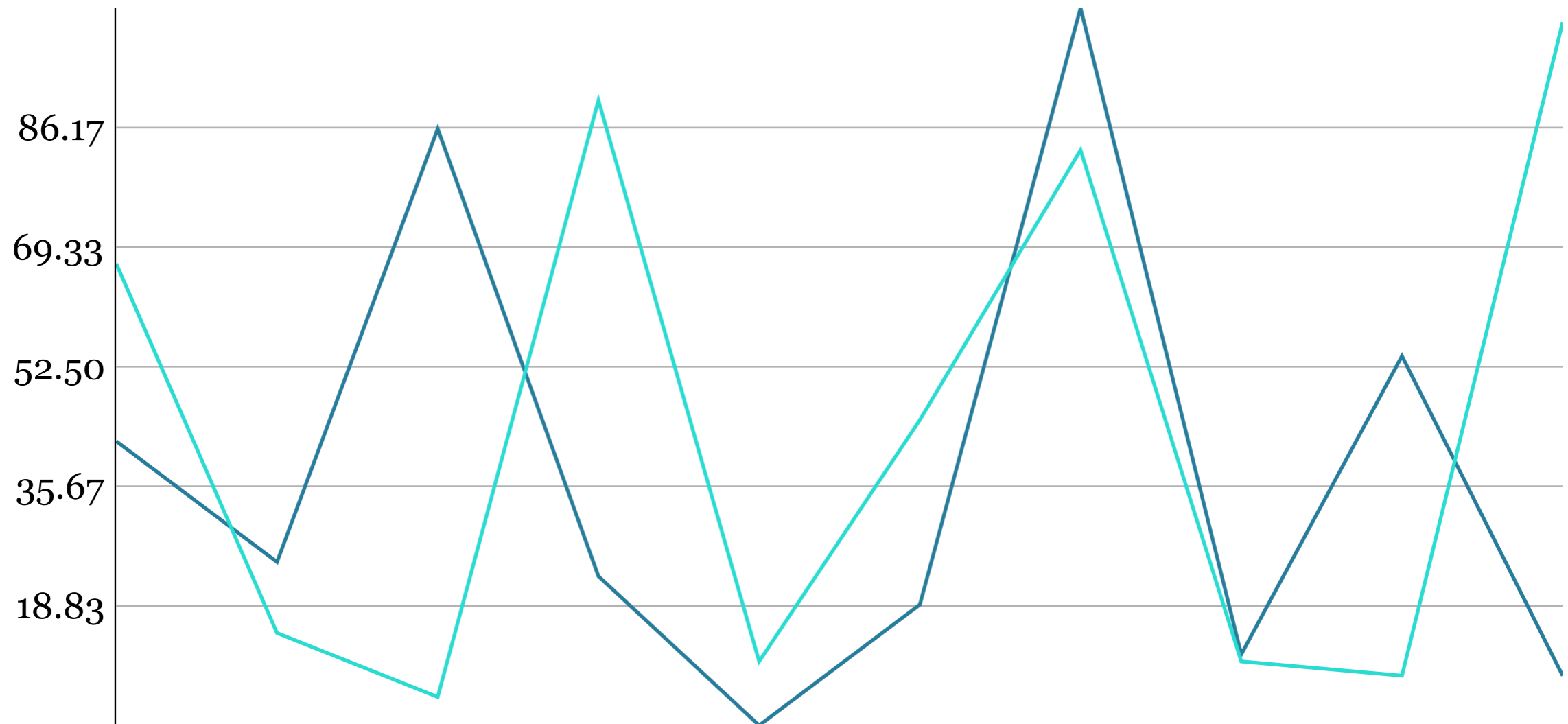


Chart::Clicker

Fancier Charts

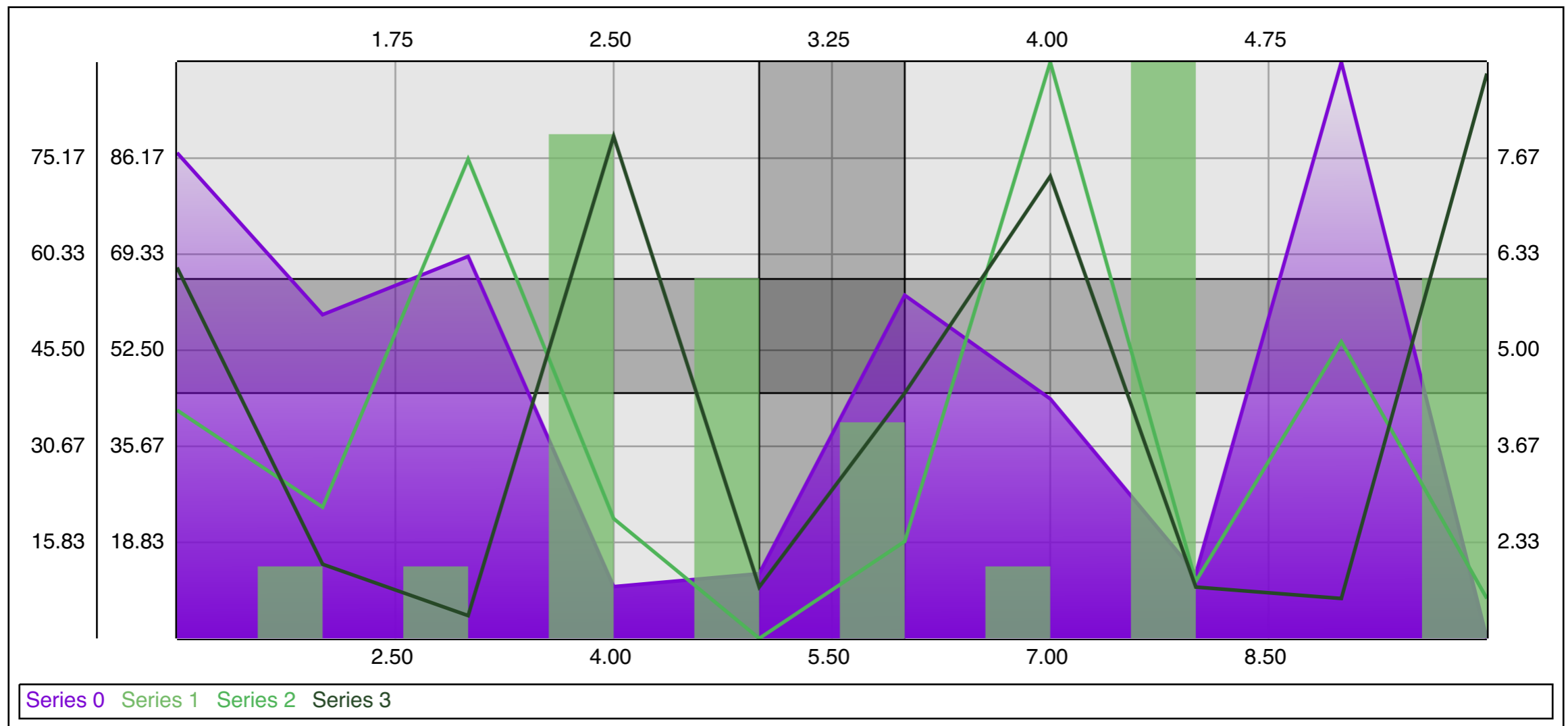
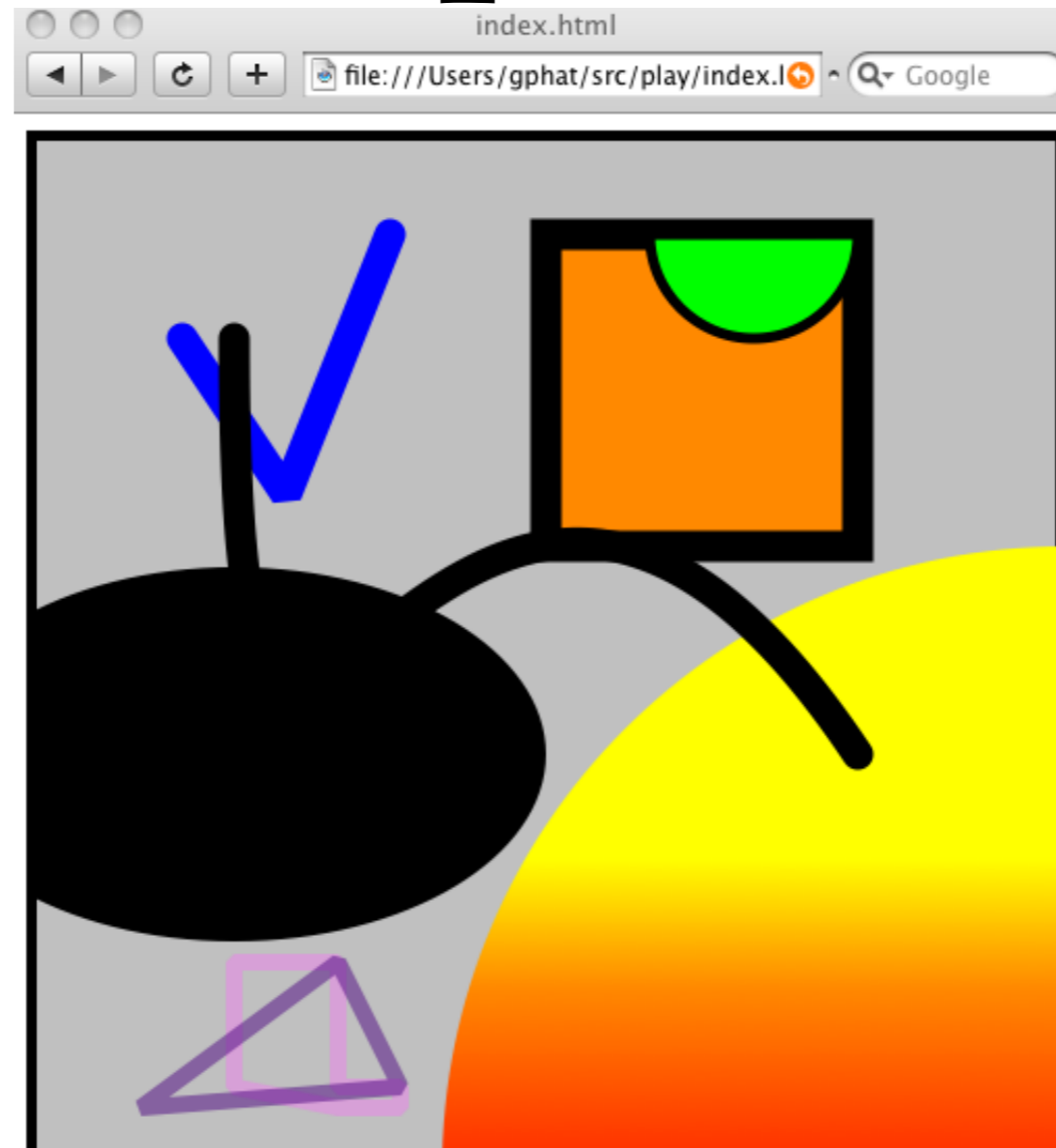


Chart::Clicker

Javascript Canvas



JSCanvas (by Cosmin Budrica)

Catalyst View



Catalyst::View::Graphics::Primitive

Laying The Foundation

- **Graphics::Color**
- **Geometry::Primitive**
- **Graphics::Primitive**
- **Layout::Manager**

Graphics::Color

- RGB, CMYK, etc
- `isa => 'Graphics::Color'`

Geometry::Primitive

- **Common entities: Arc, Bezier, Circle, Line, Point, Polygon, Rectangle**
- **Scaling, start & end points, etc**

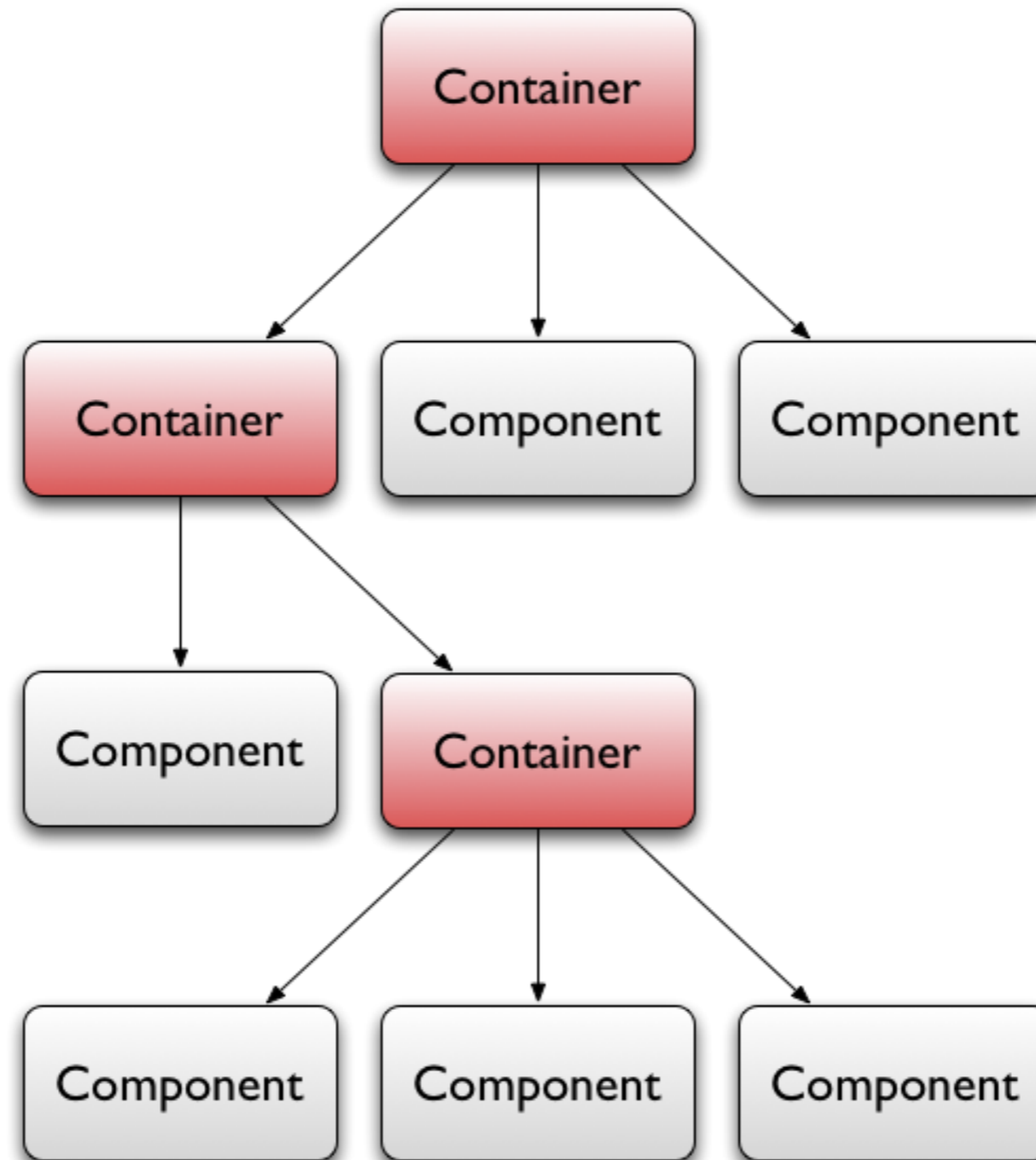
Geometry::Primitive (example)

```
$r = Geometry::Primitive::Rectangle->new(  
  origin => [0, 0],  
  width => 100,  
  height => 100  
);
```

Graphics::Primitive

- Marry styling to Geometry primitives.
- Border, Brush, Font, Insets
- Drawing

Scene Graph



Graphics::Primitive Component

- Margins, Border & Padding
- CSS Box Model
- origin, width, height, color, background_color

Graphics::Primitive Container

- Extends Component
- has 'components'
- has 'layout_manager' (more on this later)

Intermediary Representation

```
Document::Writer::Page: 0,0 (1024x768)
|---Graphics::Primitive::TextBox: 0,0 (1024x44)
|---Graphics::Primitive::TextBox: 0,714 (1024x54)
|---Graphics::Primitive::Container: 0,44 (1024x670)
|   |---Graphics::Primitive::TextBox: 10,40 (1004x160)
|   |---Chart::Clicker: 10,200 (1004x470)
|       |---Chart::Clicker::Decoration::Plot: 76,66 (852x358)
|           |---Chart::Clicker::Axis: 87.26171875,333 (727.78125x25)
|               |---Graphics::Primitive::TextBox: 108.049262152778,5 (23.845703125x12)
|               |---Graphics::Primitive::TextBox: 229.346137152778,5 (23.845703125x12)
|               |---Graphics::Primitive::TextBox: 350.643012152778,5 (23.845703125x12)
|               |---Graphics::Primitive::TextBox: 471.939887152778,5 (23.845703125x12)
|               |---Graphics::Primitive::TextBox: 593.236762152778,5 (23.845703125x12)
|           |---Chart::Clicker::Axis: 0,25 (43.630859375x308)
|               |---Graphics::Primitive::TextBox: 7.123046875,250.666666666667 (30.5078125x12)
|               |---Graphics::Primitive::TextBox: 7,199.333333333333 (30.630859375x12)
|               |---Graphics::Primitive::TextBox: 7.111328125,148 (30.51953125x12)
|               |---Graphics::Primitive::TextBox: 7.123046875,96.666666666667 (30.5078125x12)
|               |---Graphics::Primitive::TextBox: 7,45.333333333333 (30.630859375x12)
|           |---Chart::Clicker::Axis: 87.26171875,0 (727.78125x25)
|               |---Graphics::Primitive::TextBox: 108.049262152778,7 (23.845703125x12)
|               |---Graphics::Primitive::TextBox: 229.346137152778,7 (23.845703125x12)
|               |---Graphics::Primitive::TextBox: 350.643012152778,7 (23.845703125x12)
|               |---Graphics::Primitive::TextBox: 471.939887152778,7 (23.845703125x12)
|               |---Graphics::Primitive::TextBox: 593.236762152778,7 (23.845703125x12)
|           |---Chart::Clicker::Axis: 815.04296875,25 (36.95703125x308)
|               |---Graphics::Primitive::TextBox: 6,250.666666666667 (23.833984375x12)
|               |---Graphics::Primitive::TextBox: 6,199.333333333333 (23.95703125x12)
|               |---Graphics::Primitive::TextBox: 6,148 (23.845703125x12)
|               |---Graphics::Primitive::TextBox: 6,96.666666666667 (23.833984375x12)
|               |---Graphics::Primitive::TextBox: 6,45.333333333334 (23.95703125x12)
|           |---Chart::Clicker::Axis: 43.630859375,25 (43.630859375x308)
|               |---Graphics::Primitive::TextBox: 7.123046875,250.666666666667 (30.5078125x12)
|               |---Graphics::Primitive::TextBox: 7,199.333333333333 (30.630859375x12)
|               |---Graphics::Primitive::TextBox: 7.111328125,148 (30.51953125x12)
|               |---Graphics::Primitive::TextBox: 7.123046875,96.666666666667 (30.5078125x12)
|               |---Graphics::Primitive::TextBox: 7,45.333333333334 (30.630859375x12)
```

Graphics::Primitive Path

- Series of Primitives (e.g. Line, Circle)
- Drawing methods: (e.g. line_to, curve_to)

Graphics::Primitive Canvas

- Component with a Path
- save & restore
- Operations: Fill, Stroke

Graphics::Primitive Driver

- Crawls scene
- Turns IR into code
- Moose Role

Graphics::Primitive Lifecycle

```
$driver->prepare($comp);  
$driver->finalize($comp);  
$driver->draw($comp);  
$driver->write($filename);
```

Layout::Manager

- Sizes & positions components in a container.
- Can be nested. Containers in containers.

Things I Didn't Mention

- `MooseX::Storage`: Fully Serializable
- Cairo, Cairo+Pango, JSCanvas
- Driver hinting: per-driver optimizations
- `$container->find(...)->each(...)`

Future Work

- Transformations?
- More page layout.
- Make more drivers
- Converters!
- More features...

Thanks!

Email: `gphat@cpan.org`

IRC: `irc.perl.org`, `#graphics-primitive`

`http://search.cpan.org/perldoc?Graphics::Primitive`