A short tour of

Animo

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Latin:

1st pers. of *animare* “I bring to life”
ablative of *animus* “with intent”

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Everything on a slide competes for attention.
Animate what earns it.

Disclaimers

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2. Only the smallest examples are explained with source code in the slides.

   The full source code of this deck can be found in `examples/tour.typ` in the Animo Git repository.

You can keep things simple ...

````typst
#import "@preview/animo:0.1.1": *
#show: animo.with(width: 16cm, height: 9cm, margin: 1cm)

#slide[
  = You can keep things simple ...

  ```typst
  ...
  ```
]
````

… but you don't have to!

Animations

```
#slide(animation: {
  import anim: *
  sub(reveal("first"))
  sub(reveal("second"))
  sub(hide("first"), scale("first", f: 2))
})[
  = A slide with three "sub"slides

  #tag("first")[Appears first, will go out with a bang.]

  #tag("second")[Appears second and stays.]
]
```

A slide with three “sub”slides

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All the Space You Need

Consider the following fun mathematical problem:

Find three real values, $\{x_1, x_2, x_3\}$, with given population statistics: mean μ, standard deviation σ and skewness γ (if the solution exists).

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The solution

1. Eliminate the mean by writing $u_k = x_k - \mu$. The three given statistics translate into the following equations:

$$\begin{cases} p_1 = u_1 + u_2 + u_3 = 0 \\ p_2 = u_1^2 + u_2^2 + u_3^2 = 3\sigma^2 \\ p_3 = u_1^3 + u_2^3 + u_3^3 = 3\gamma\sigma^3 \end{cases}$$

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3. One can show this by simply constructing the coefficients:

$$a = u_1 + u_2 + u_3 = p_1 = 0$$

$$b = u_1 u_2 + u_2 u_3 + u_3 u_1 = \frac{p_1^2 - p_2}{2} = -\frac{3}{2}\sigma^2$$

$$c = u_1 u_2 u_3 = \frac{p_1^3}{6} - \frac{p_2 p_1}{2} + \frac{p_3}{3} = \frac{p_3}{3} = \gamma\sigma^3$$

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Note: This equation was derived here from scratch, but mathematicians have names for the trick and the intermediate quantities involved:

- The sums p_1, p_2 and p_3 of step 1 are the power sums.
- The coefficients a, b and c are the elementary symmetric polynomials of the roots.
- The little computation is referred to as Newton's identities for three variables.

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5. Substitute $t = \sqrt{2}\sigma\cos\theta$ and divide by σ^3. The left-hand side is then the triple angle identity $\cos 3\theta = 4\cos^3\theta - 3\cos\theta$ in disguise:

$$\frac{\sqrt{2}}{2}\left(4\cos^3\theta - 3\cos\theta\right) = \gamma \quad\Longleftrightarrow\quad \cos 3\theta = \sqrt{2}\gamma$$

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6. The cosine takes that value at three angles, one per root:

$$x_k = \mu + \sqrt{2}\sigma \cos\left(\frac{\arccos\left(\sqrt{2}\gamma\right) + 2\pi k}{3}\right), \quad k = 0, 1, 2$$

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   The angle is real only for $|\gamma| \leq \frac{1}{\sqrt{2}}$, and that bound is no accident: it is the largest population skewness three real values can have.

Animo Slide Anatomy

A slide is a view onto a canvas.

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A slide is a view onto a canvas.

The canvas can extend beyond the viewport.

The canvas can extend beyond the viewport.

A slide is a view onto a canvas.

You can pan the viewport to look around.

The canvas can extend beyond the viewport.

A slide is a view onto a canvas.

You can pan the viewport to look around.

Anything outside the viewport gets clipped.

Nothing flows onto the next slide.

Code your animations in typst

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Space Is Reserved

```
This sentence contains a #tag("1")[hidden]
word and *reserves space* for it.
```

This sentence contains a word and **reserves space** for it.

```
#region[
  This sentence contains a #tag("1")[hidden]
  word and will *reflow* because it is *replaced* as a whole.
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Animated Equations

$$D = \frac{1}{2d} \int_{-\infty}^{\infty} \left\langle (v)(t) \cdot (v)(0) \right\rangle \, \mathrm{d}t$$

Animated Equations

$$D = \frac{1}{2d} \boxed{\lim_{f \to 0}} \int_{-\infty}^{\infty} \left\langle (v)(t) \cdot (v)(0) \right\rangle \boxed{e^{i 2 \pi f t}} \, \mathrm{d}t$$

Animated Content Inside a Cetz Figure

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Timer controls (in HTML)

A presenter can always step ahead of a timer.
Travelling back plays the deck backwards, and `Space` stops it where it is.

Timer controls (in HTML)

1. `wait:` on a `sub` or on a `#slide` autoplays its animation after waiting the given number of seconds.

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Timer controls (in HTML)

1. `wait:` on a `sub` or on a `#slide` autoplays its animation after waiting the given number of seconds.

2. `hold:` on a `sub` or on a `#slide` has the same autoplay effect on the **next** (sub)slide.

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Timer controls (in HTML)

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2. `hold:` on a `sub` or on a `#slide` has the same autoplay effect on the **next** (sub)slide.
3. `delay:` delays an animation primitive, e.g. `reveal`, `move`, `scale`, etc.

   This sentence was shown with 0.3 seconds of delay.
4. `duration:` controls the speed of an animation primitive. (This item had a `duration` of 1 second.)

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Output Types

Output Types

1

HTML presentation

The animated deck

To be presented with a browser

Output Types

1

HTML presentation

The animated deck

To be presented with a browser

2

Static presentation

One page per step

For a venue without a browser

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3

Static handouts

One page per slide

For printing or distributing

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3

Static handouts

One page per slide

For printing or distributing

The two static types are paged modes
and can be exported to PDF, SVG or PNG.

Whenever your present …

Whenever your present …

… present *Animo.*

Thank you for watching!