

# *Santa Tracker*

[g.co/santatracker](https://g.co/santatracker)



*Sam Thorogood*

**@samthor**



SANTA TAKES OFF IN

09

DAYS

13

HRS

28

MIN

04

SEC

# Santa Tracker

Explore, play and learn with Santa's elves all December long

New Today

Santa Search











**Eaton Elementary**

@EatonElementary

Follow

Our first graders had fun using Google's Santa Village Elf Dancing coding activity. We wrote code for the elves and then danced with them!



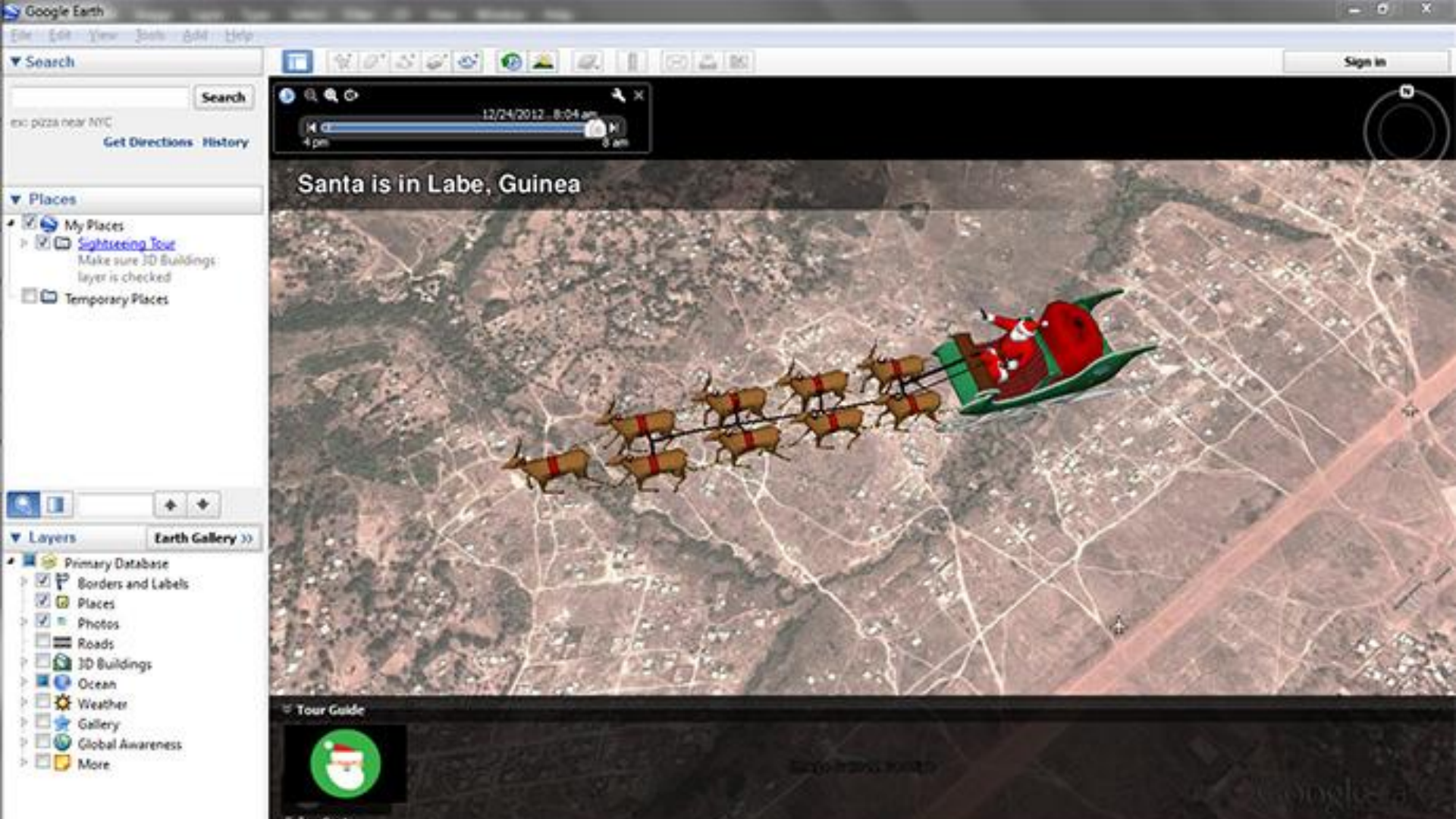
LIKES

4









▼ Search

Search

Get Directions History

▼ Places

- My Places
  - Sightseeing Tour
    - Make sure 3D Buildings layer is checked
  - Temporary Places

▼ Layers Earth Gallery >>

- Primary Database
  - Borders and Labels
  - Places
  - Photos
  - Roads
  - 3D Buildings
  - Ocean
  - Weather
  - Gallery
  - Global Awareness
  - More

12/24/2012 8:04 am

4 pm 8 am

Santa is in Labe, Guinea



Tour Guide



Sign in

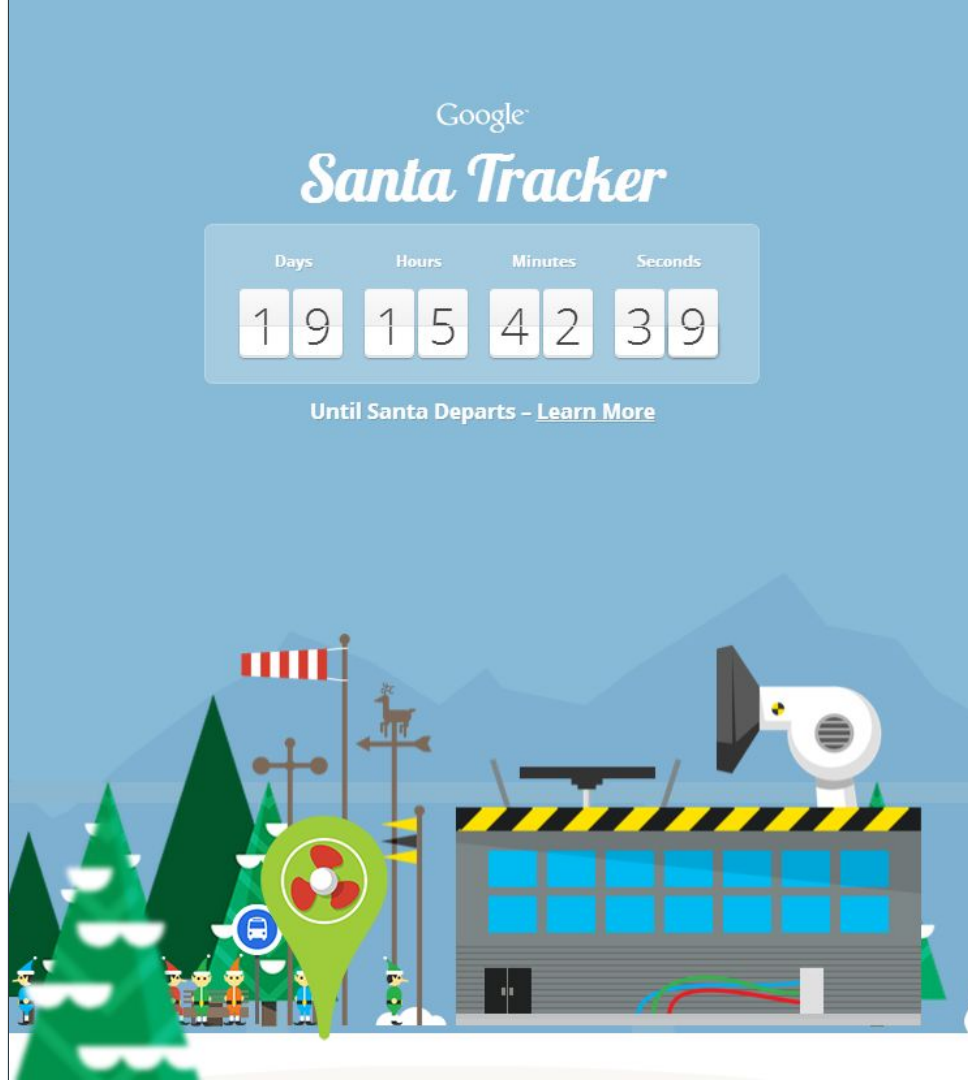


# '14: Polymer 0.5

- Custom Elements + Shadow DOM!



- ...tons of polyfills ☹
  - Shadow DOM
  - `Object.observe`





# Now: Polymer 2ish

- Responsive village design—mobile cards or 'playful' village
- Still CEs and Shadow DOM
  - ...browsers caught up to us
  - ...also with two-way `binding="{_binding}"`



```
<dom-module id="santa-app">
  <template>
    <santa-strings id="strings"></santa-strings>
    <iron-a11y-keys keys="esc enter" on-keys-pressed="_onKeysPressed"></...>
    <preload-overlay id="preloader"></preload-overlay>

    <santa-state during-tracker="{{duringTracker}}" ...></santa-state>
    <santa-tracker-router route="{{route}}"></santa-tracker-router>

    <santa-chrome id="chrome" pause="{{userPause}}" ...>
      <lazy-pages selected-item="{{selectedScene}}" ...>
        <dorf-scene route="village" icon="1f384" permanent
          path$="scenes/dorf/dorf-scene_[[language]].html"
          class="santa-scene" allow-page-scrolling></dorf-scene>

        <!-- More scenes (30+) below -->
```



```
<dom-module id="santa-app">
<template>
  <santa-string ...>
  <iron-a11y-keys keys="esc" on-keys-pressed="_onKeysPressed"></...>
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  <!-- More scenes (30+) below -->
```

Shows friendly loader

Lazy loads Polymer elements at runtime





## Generated, shared strings for i18n

```
<do
<template>
  <santa-strings id="strings"></santa-strings>
  <iron-a11y-keys keys="esc enter" on-keys-pressed="_onKeysPressed"></...>
  <preload-overlay id="preloader"></preload-overlay>

  <santa-state during-tracker="{{duringTracker}}" ...></santa-state>
  <santa-tracker-router route="{{route}}"></santa-tracker-router>

  <santa-chrome id="chrome" ...>
    <lazy-pages selected-item="{{selectedScene}}" ...>
      <dorf-scene route="village" icon="1f384" permanent
        path$="scenes/dorf/dorf-scene_[[language]].html"
        class="santa-scene" allow-page-scrolling></dorf-scene>

    <!-- More scenes (30+) below -->
```

Singleton for Santa's position, the current date



# How does it work?

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- SPA (*-ish*) with 50+ scenes
- Scenes are lazyloaded HTML imports into top frame (*-ish*)
  - JS is up to a decade old



# What is terrible?

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- Scene JS is wide and varied
  - *jQuery, Phaser, Three.js, Blockly, P2.js, Paper.js, Blockly*
- Polymer became a hammer 🔨
- 30m builds—thanks, HTML imports
- JS runs in top frame
- So many other things





# Build Time

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- Even in dev, build time for Santa takes ages 🐢
- Problem: 50 different scenes (JS with Closure, SASS, i18n etc) but what do I actually care about?



# On-demand build

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- Different Babel/etc configs: dev, prod, prod-nomodule
- dev rewrites just enough for module browsers to run (no bundling)
- **Some template tags are magic** 🍷 ✨



```
export class SantaButtonElement extends LitElement {
  static get properties() {
    return {
      color: {type: String},
    };
  }

  render() {
    return html`
<style>${_style` santa-button`}</style>
<button class="${this.color || 'yellow'}"><slot></slot></button>
`;
  }
}
```





```
export class SantaButtonElement extends LitElement {
  static get properties() {
    return {
      color: {type: String},
    };
  }

  render() {
    return html`
      <style>${_style` santa-button`}</style>
      <button class="${this.color || 'yellow'}"><slot></slot></button>
    `;
  }
}
```

Use magic template tag



```
const templateTagReplacer = (name, arg, dirname) => {  
  if (name === '_style') {  
    const {css, map} = compileCss(path.join(dirname, `${arg}.scss`), options);  
    return css;  
  } else if (name === '_msg') {  
    // etc  
  }  
};  
  
babelPlugins.push(buildTemplateTagReplacer(templateTagReplacer));
```



```
const templateTagRepl => {
  if (name === '_style')
    const {css, map} = compileCss(path.join(dirname, `${arg}.scss`), options);
    return css;
  } else if (name === '_msg') {
    // etc
  }
};

babelPlugins.push(buildTemplateTagReplacer(templateTagReplacer));
```

Knows how to replace tag





# The Future

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- Complete rewrite of SPA/"App Shell" using ES Modules
- Scenes all loaded in iframes—code is varied and too hard to 'shut down'



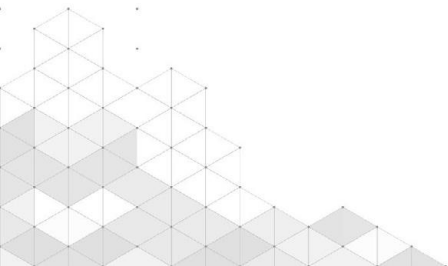
# Things I Forgot

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~45% non-English

50/50 mobile/desktop split

~10% mobile loads are PWA



# Thanks!

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- 🔍 *The Gift of Giving Up*
- 🔍 *Santa Tracker as a PWA*
- 🐦 **@samthor**
- 📄 <https://emojityper.com>

