The Road to 200,000 Downloads: The Cesium Story

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What is Cesium?

World-class 3D globes and maps in the browser

- Tile and host geospatial data with Cesium ion’s simple workflow
- Create custom 3D geospatial mapping apps with the open-source CesiumJS library
- Stream massive heterogeneous 3D geospatial datasets with 3D Tiles
What is Cesium?
First Year to Today

- 22 contributors
- 150 GitHub stars
- 729 lifetime downloads (est.)

- 157 contributors
- 3,092 GitHub stars
- 262,000 lifetime downloads (est.)
First Year to Today

- 22 contributors
- 150 GitHub stars
- 729 lifetime downloads (est.)

Millions Users

- 157 contributors
- 3,092 GitHub stars
- 262,000 lifetime downloads (est.)
Who Does Outreach?
Who Does Outreach?
How did we get here?

How can your project get here?
Communicate: News

- **Blog: News**
  - New releases
  - Team updates
  - Cesium features
  - Success stories
  - Events

- **Blog: Development**
  - Most popular
  - Require more dev team investment
  - Guest blog posts and reviews
Communicate: Documentation

Design for contribution

Checklist
- Description
- README
- Code of conduct
- Contributing
- License
- Issue template

Have enough documentation ... contributors will follow it

Provide entry points ... that are easy
Communicate: Documentation

Cesium Contributors

- Total Contributors
- AGI contributors

Contributors (cumulative)

Month

1/1/13 1/1/14 1/1/15 1/1/16 1/1/17 1/1/18
Communicate: All Channels

CesiumJS Downloads

Latest release

Download CesiumJS 1.45
59 MB | May 01, 2018

1.45 2018-05-01

Highlights include:

- We've launched Cesium ion! Read all about it in our blog post.
- Cesium now uses ion services by default for base imagery, terrain, and geocoding. A demo key is provided, but to use them in your own apps you must sign up for a free Ion Community account.
- Cesium now uses a logarithmic depth buffer, which reduces CPU overhead, decreases the number of draw calls, and removes multi-frustum artifacts. #5851
- Numerous glTF improvements in visual quality and loading performance.
- Fix flicker when adding, removing, or modifying entities. #3945

See the change log for the complete list of changes.

CesiumJS is released monthly. Each release contains:

Forum

Blog

Twitter

LinkedIn
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:05</td>
<td>Cesium booth: Kansas Aviation Portal&lt;br&gt;Jaime Katz, Matt Jones, Denver Pierce, Burns &amp; McDonnell</td>
</tr>
<tr>
<td>10:00</td>
<td>Cesium booth: Wayfinder 3D &amp; GPS to CZML&lt;br&gt;Will Geary, Columbia</td>
</tr>
<tr>
<td>11:15</td>
<td>Gateway II: 2D to 3D</td>
</tr>
<tr>
<td>12:00</td>
<td>Gateway II: The Road to 200,000 Downloads&lt;br&gt;Sarah Chow, Cesium</td>
</tr>
<tr>
<td>2:00</td>
<td>Gateway II: CityGML, 3D Tiles, &amp; Cesium: A Data Fusion Symphony&lt;br&gt;Shehzan Mohammed, Cesium</td>
</tr>
<tr>
<td>2:00</td>
<td>Gateway III: Using Cesium &amp; Open Source for Visualization of Atmospheric &amp; Space Science Data&lt;br&gt;Fernando Sanchez, LASP</td>
</tr>
<tr>
<td>2:45</td>
<td>Gateway II: Data Fusion with 3D Tiles&lt;br&gt;Sean Lilley, Cesium</td>
</tr>
<tr>
<td>3:00</td>
<td>Cesium booth: MAVEN &amp; MMS&lt;br&gt;Fernando Sanchez, LASP</td>
</tr>
<tr>
<td>3:45</td>
<td>Gateway II: mago3D: Let’s integrate BIM/AEC</td>
</tr>
</tbody>
</table>
Facilitate
Facilitate: Forum

• Have **one** central community forum
  – Public, searchable answers in one place
  – Crosslink as much as possible to create an "archive of links"

• Dedicate a team member to facilitating the forum
  – Respond promptly
    …But not too promptly
  – Watch for trends, encourage contribution, find potential collaborators
Facilitate: Example

Renderer roadmap #3001
lilleyse opened this issue on Sep 8, 2015 · 3 comments

- Cleanup
  - Refactor command execution. For example use `computeEngine.execute(command)` directly.
  - Pass just `framerate` to update functions. Place `context` and `commandList` inside `framerate`, #1753.
  - Separate command lists to avoid sorting based on pass type later.
- Instancing
  - Instanced draw calls built into Renderer
  - Update BillboardCollection if possible
  - Instanced 3D models
  - 3D Tiles integration
- WebGL 2, #797
- Post-processing, #5615
- Shadows, #2594 (branch)
- Particle system #5212
- Shader pipeline, #1031

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This page contains a screenshot of a GitHub issue thread titled "Renderer roadmap #3001". The issue was opened by lilleyse on September 8, 2015, and has three comments. The comments include a list of tasks and improvements related to the renderer, such as refactoring command execution, passing `framerate` to update functions, separating command lists, instancing, WebGL 2 integration, post-processing, shadows, particle system, and shader pipeline. The tasks are marked with checkboxes, indicating progress.
Facilitate: Example

Particle Systems PR #212

@jasonbeverage commented on Apr 17, 2017 • edited by bagnell

This PR adds particle system support to Cesium. This work is a conglomeration of ideas from:

- The original particles branch that @bagnell did
- osgParticle from OpenSceneGraph
- Unity's particle system
- My own ideas :)

I'm sure you'll have plenty of feedback on this one so I wanted to get it out early.
Amplify: Showcases

The East Japan Earthquake Archive
An archive of images, tweets, and survivor stories from the 2011 East Japan Earthquake.

Summary

The East Japan Earthquake Archive is a digital archive representing the damage caused by the Great East Japan Earthquake of 2011. Photographs from newspapers, tsunami survivors’ testimonies, TV footage, and tweets are plotted on Cesium’s 3D map. Users can browse all of the data dynamically from a bird’s-eye view and an on-the-ground view. This archive was made using the same method as that of the Hiroshima Archive and Nagesaki Archive, also created by Hidenori Watanave of Tokyo Metropolitan University.

The archive allows users to explore multiple data layers, including newspaper photographs, survivor testimonies, and tweets related to the earthquake, all plotted by location.

Taking 172 photographs from newspapers, Professor Watanave and his production team estimated and specified camera parameters for each and reproduced the function of KML photo overlay in Cesium. When a user clicks a picture icon, a camera moves and the photography angle is reproduced. Through this function, users can better understand the context and feel the reality of pictures about the disaster.

Also included in the archive are tsunami survivors’ testimonies that have been translated into English and student volunteers. Also, some testimonies include binaurally allowing the spatial sound environment of the disaster and are reproduced using Cesium.

While a testimony is a recollection of a survivor’s memory in the past, a tweet is a record of feelings at the moment of a disaster, making tweets the new form of disaster testimonies in the age of big data. The archive contains 4,214 Japanese tweets published within 24 hours of the earthquake (without mentions and bots’ tweets). The data in this layer is the result of the Great East Japan Earthquake Big Data Workshop: Project 311.

All data was collected in cooperation with nationwide volunteers and local university students. The main goal was to develop a community of memories that would enable users to participate in the archives as creators and grow a collection of archives on their own. The archive is a platform to gather threads of stories for the future by sharing past memories and present messages in both physical and web spaces.

Originally published using the Google Earth API, in 2015 the East Japan Earthquake Archive was converted to Cesium. The archive earned an honorary mention by Prix Ars Electronica 2013.
Amplify: Twitter

Remember the East #Japan Earthquake 7 years ago today with @hwtmv's archive of tweets, news stories, and survivor stories. cesiumjs.org/demos/EastJapan

Include media

@mention right people

Tweet at optimal times

12:46 AM - 11 Mar 2018

25 Retweets 22 Likes
Summary

1. **Communicate** clearly
   - Choose transparency

2. **Facilitate** effective conversations
   - Create a space for community

3. **Amplify** community work
   - Turn contributors into rockstars
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cesium.com
Bonus Slides
Resources

- **Art of Community**, Jono Bacon
  - Growing, focusing, and managing communities
- **Traction**, Gabriel Weinberg (DuckDuckGo) & Justin Mares
  - Methods of reaching users
- **Growing an Open Source Community**, Gabby Getz (Cesium)
  - How we grew Cesium’s contributor and committer communities.
- **Hints for successfully managing an open-source project**, David Catuhe, BabylonJS
- **Healthy Open Source**, Mikeal Rogers, Node.js
- **Polite Technology**, Tom MacWright
Open Source Community

- Founders / Steering Committee
- Committers
- Contributors
- Users
Communicate: Blog

Blog Posts Published Each Month

- 1/1/13
- 1/1/14
- 1/1/15
- 1/1/16
- 1/1/17
- 1/1/18

Graph showing the number of blog posts published each month from 1/1/13 to 1/1/18.
Contributor Stats
(as of February 2018)

• **98 contributors**
  – **32 AGIers** (founding company)
Contributor Stats

Monthly contributors committing to master:

February 20 - March 20:
- 15 contributors
  - # Cesium team: 9
  - # Other AGlers: 2
  - # Community: 4

March 20 - April 20:
- 13 contributors
  - # Cesium team: 8
  - # Other AGlers: 1
  - # Community: 4
More Tips

- Start with **one** public forum
- Default to the forum. Minimize private email
- Always ask for feedback. [Cesium in 2016](#)
- Have a [Code of Conduct](#)
- Consider [Issue Templates](#)
- Use Google Alerts
- Conference and Meetup talks
- Be careful about corporation ownership
Ideas for Tweets

- New Cesium releases
- Retweet tweets mentioning @CesiumJS
- New showcases and Cesium blog posts
- Upcoming Cesium features
- External contributions, especially someone's first contribution
- Relevant conference news, code sprints, events, etc.
- Useful Cesium forum threads
- glTF news. Likewise: 3D Tiles, CZML, and quantized-mesh news
- AGI new hires and Cesium-related job openings (AGI or others)
- Sparingly, milestones such as number of followers, stars, unit tests, lines of code, etc.

Schedule tweets with TweetDeck.
Cesium Milestones

March 2011
- internal development started
- Cesium ion announced

April 2012
- released as open-source

August 2014
- Cesium 1.0 released

May 2016
- Cesium ion announced

March 2018
- Cesium ion launched
Bonus: Tips to get Contributions

• Grow the user community to grow the contributor community
• Make contributors rockstars - blogs, forum, twitter, etc.
• Use CLAs
  – High barrier to entry at first, now we get 1+ a week.
• Document standards, most contributors read them
• “Plugins” get most of the contributions
• It's really hard to find time to review contributor pull requests that aren't a priority, especially big ones
• Only merge code you are willing to maintain it
Amplify: Twitter

What do you think of the upcoming particle system in Cesium thanks to @jasonbeverage and @pelicanmapping? github.com/AnalyticalGraph...

@cesiumus .@cubecities is already making use of the new particle system in Cesium! cubecities.blogspot.com/2017/07/floor-

@cesiumus The next Cesium release includes the new particle system by @jasonbeverage, for smoke, fireworks, etc. github.com/AnalyticalGraph...
Facilitate: Forum

Forum Members

- Members (cumulative)
- Month

Graph showing the cumulative number of forum members from January 1, 2016, to January 1, 2018, with a steady increase over time.
Amplify: Twitter

Twitter Followers

0 1000 2000 3000
1/1/15 1/1/16 1/1/17 1/1/18