Drag-and-drop web platform for 3D digital twins

DIGITAL TWINS, EASIER

Jay Byam || jay.byam@kartorium.com

Kartorium

kartorium.com   Anchorage AK

Software   Infrastructure

LEAD INVESTOR

Ana Kaiser

Kartorium is the winner of theAlaska Angel Conference 2022. The group of investor was highly impressed with Jay Byam and his highly qualified team and we truly believe they will take they company to the next level. The relevance of Digital Twins to utility and oil companies -amongst other potential clients; and their proven success in Alaska were deciding factors for our group. As the Fund Manager for the AAC, I am beyond proud to invest in this company and to support another Alaskan entrepreneur.

Invested $5,000 this round

Highlights

(1) Business-to-business (B2B), software-as-a-service (SaaS) company

(2) Over $200K in made and committed revenue so far this year

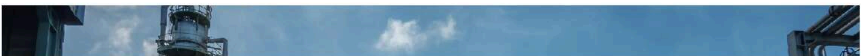(3) Selected by the Alaska Angel Conference 2022 investors

Our Founder

Jay Byam Founder & CEO

Jay is a former senior software consultant and developer with experience working on 3D, AR and VR projects for large Fortune 500 companies including Amazon and GE.

Pitch

DIGITAL TWINS, EASIER

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Kartorium

BRIEF HISTORY

Delta Junction, Alaska

UNIVERSITY OF ALASKA FAIRBANKS

amazon Alyeska pipeline

PROBLEMS

Data is siloed.

Not all the people who need to know, do know.

Workforce turnover
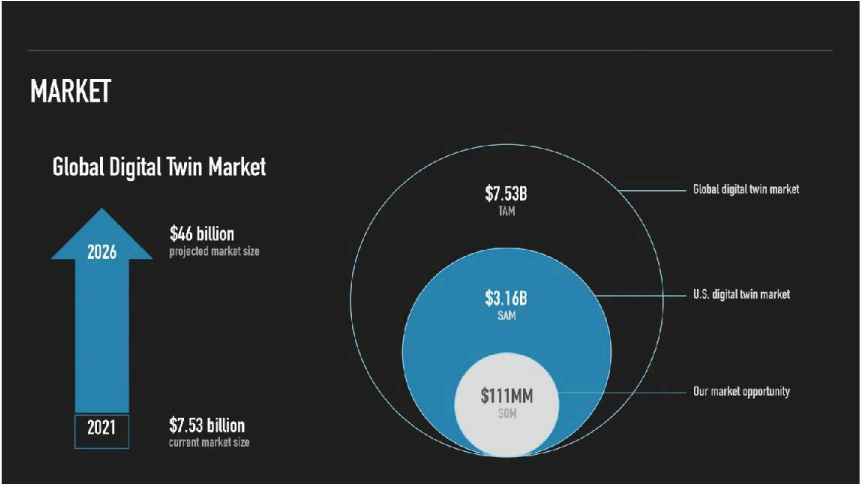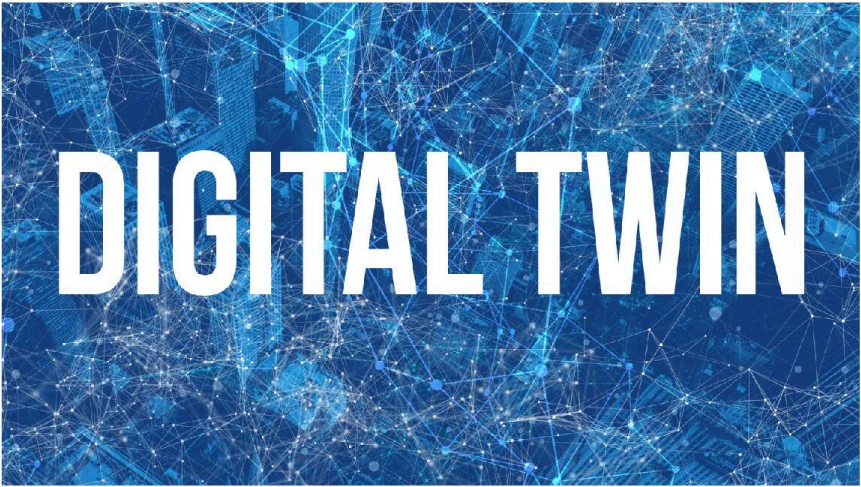They take it with them
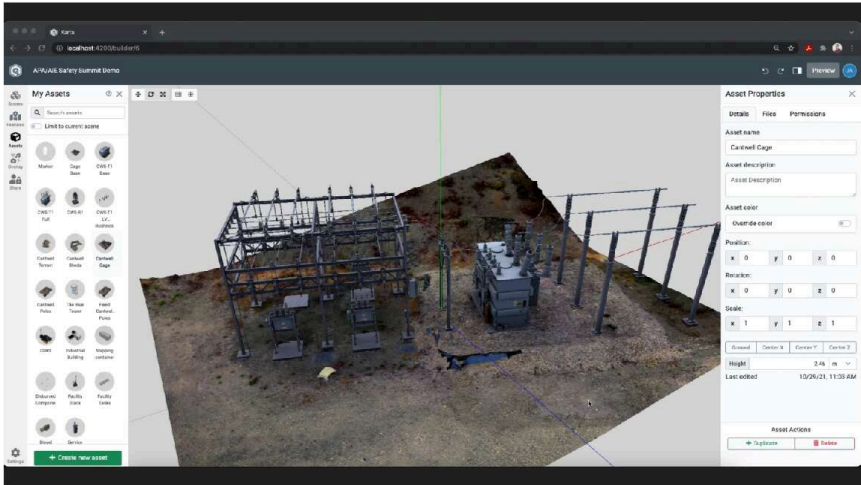
Remote, harsh conditions
Travel, rework

Too technical
Not designed for normal people

DIGITAL TWIN

MARKET

Global Digital Twin Market

2026 — $46 billion
projected market size

2021 — $7.53 billion
current market size

$7.53B
TAM — Global digital twin market

$3.16B
SAM — U.S. digital twin market

$111MM
SOM — Our market opportunity

DIGITAL TWIN

It doesn't need to be that hard.

STEP 1

VIRTUALIZE

STEP 2

CONFIGURE
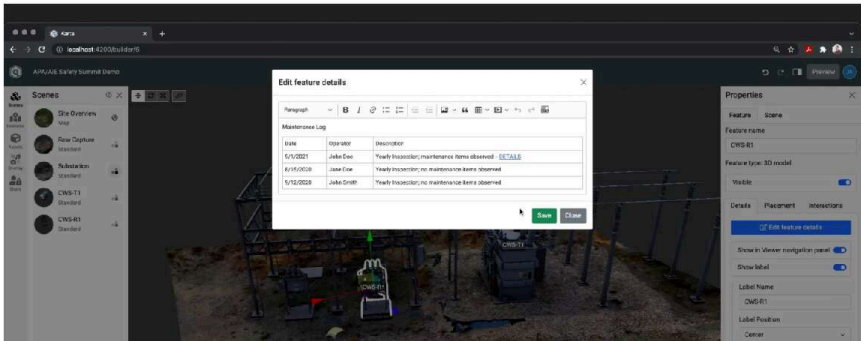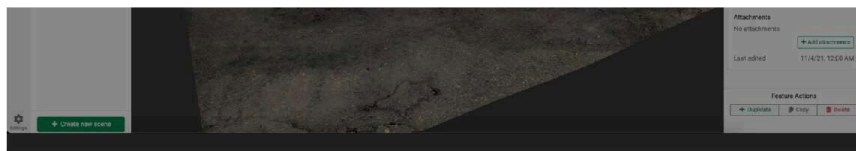
COLLABORATE
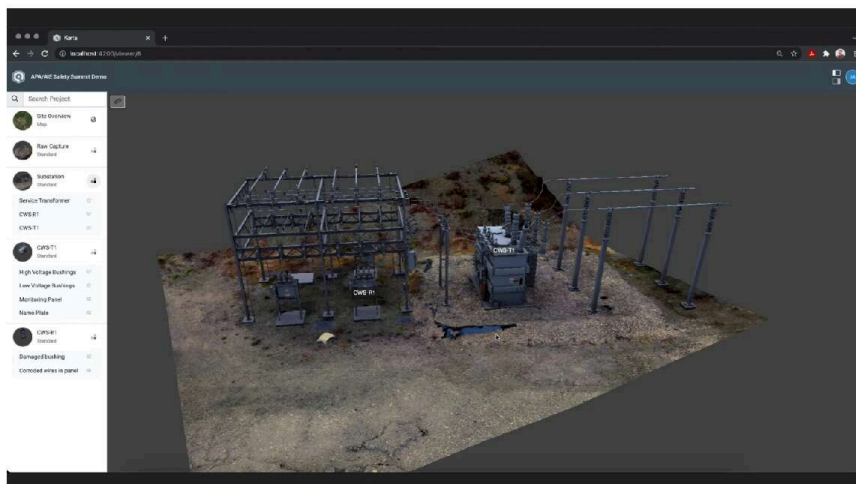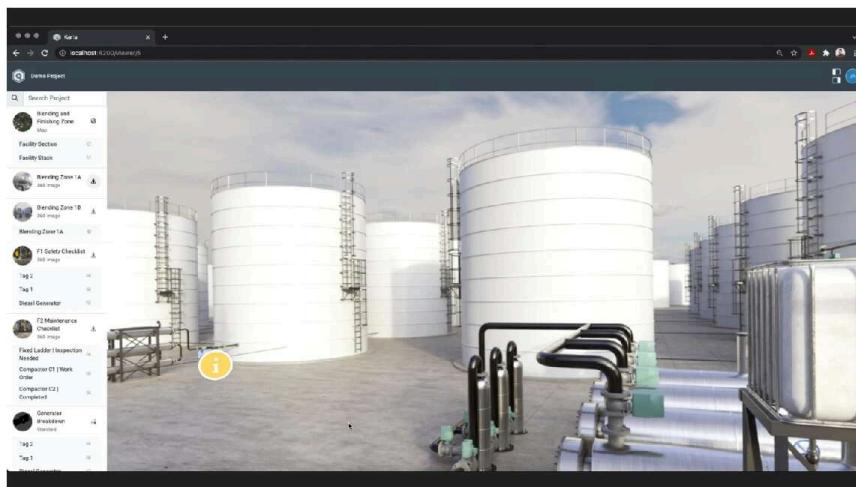
VALUE PROPOSITION

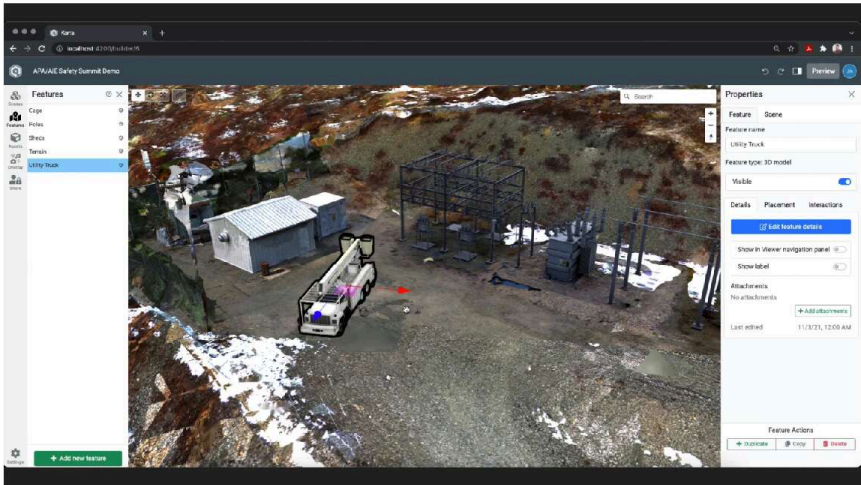Next-gen operations

Faster, better training
Scientifically proven methods

Leverage the information age

Accessible anywhere
Remote planning and learning, anytime

REVENUE – B2B SAAS

Assets

Users

Admin Manage users and payments	$100 per user / per month
Collaborator Create and edit projects	$50 per user / per month
Read only View private projects	$10 per user / per month

Images

Up to 100 images 100 images and tags in digital form	FREE
1,000 images Package of images and tags	$200 per package / per month
10,000 images Package of images and tags	$750 per package / per month

Models

Up to 100 models 10 models in digital form	FREE
1,000 models Package of 3D models	$500 per package / per month
10,000 models Package of 3D models	$1,600 per package / per month

Publish

Any number of public projects Unlimited public read-only access	$5,000 per year

Services: $125/hr

TEAM

Jay Byam
CEO
Full-time

Colton Anderson
Technical Account Manager
Full-time

Anthony van Weel
Developer Intern
Full-time

Melanie Bladow
Business Development
Part time

Joseph Byam
Developer / Drone Pilot
Full-time

Ray Byam
Developer Intern
Full-time

Jonathan Chronister
Lead Full Stack Developer
Full-time

Alora Greer
Developer Intern
Full-time

Dima Bondar
Developer Intern
Part time

TRACTION

Total Investment
$370,000

Total Revenue
$200,000*

Annual Revenue
$15,000*

* Made and committed

gBETA INNOVATION SUMMIT LAUNCH ALASKA GVEA ARUC Kotzebue Electric Association

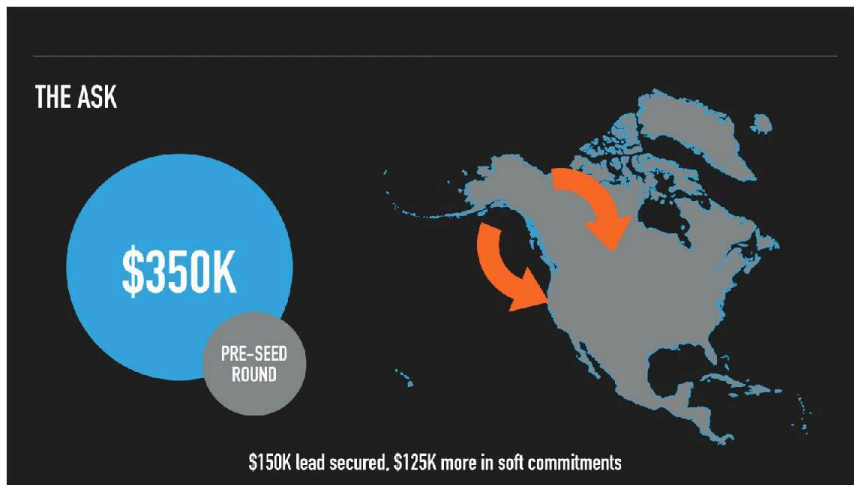A 60 HERTZ I-CORPS NSF Innovation Corps KING COVE

The committed revenue is not guaranteed to close.

TIMELINE & PROJECTIONS
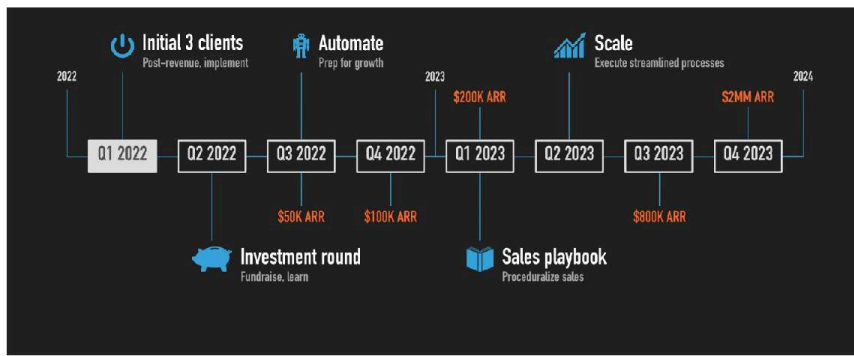
This slide contains forward-looking projections that cannot be guaranteed.

Only $250k of the $350k listed on this slide will be offered on Wefunder.

APPENDIX A: IMPACT OF 3D ON KNOWLEDGE TRANSFER

- Bob G. Witmer, John H. Bailey, Bruce W. Knerr, Kimberly C. Parsons. *Virtual spaces and real world places: transfer of route knowledge*. International Journal of Human-Computer Studies, Volume 45, Issue 4, 1996. https://doi.org/10.1006/ijhc.1996.0060.
  - Virtual Environment (VE) training decreased wrong turns by 64% over verbal instruction with images (average of 9.15 down to 3.30)
  - VE training decreased traversal time by 32% over verbal instruction with images (average of 11:55 down to 8:09)
- M. Vidal. *Influence des cadres de référence sur la mémoire spatiale de trajets en trois dimensions*, 1999. https://www.semanticscholar.org/paper/Influence-des-cadres-de-référence-sur-la-mémoire-de-Vidal/b91b7a5670a6e9ce366e1f96d572ab00e8ac11e5.
  - VE training decreased angular error by 37% over training with snapshots (average score of 135 down to 85)
  - VE training decreased distance error by 28% over training with snapshots (average score of 39 down to 28)
- Chittaro L, Buttussi F. *Assessing Knowledge Retention of an Immersive Serious Game vs. a Traditional Education Method in Aviation Safety*. IEEE Trans Vis Comput Graph. 2015. https://doi.org/10.1109/tvcg.2015.2391853.
  - VE training increased knowledge retention by 16% over 2D safety card (average score of 7.29 up to 8.42)
  - VE training increased self-reported engagement by 48% over 2D safety card (average score of 3.41 up to 5.04)

APPENDIX B: IMPACT OF INTERACTIVITY ON KNOWLEDGE TRANSFER

▸ Grégory Wallet, Hélène Sauzéon, Jérôme Rodrigues, and Bernard N'Kaoua. *Transfer of spatial knowledge from a virtual environment to reality: Impact of route complexity and subject's strategy on the exploration mode.* JVRB - Journal of Virtual Reality and Broadcasting, 6 (2009), no. 4. https://www.jvrb.org/past-issues/6.2009/1757.

  ▸ Interactive virtual learning decreased way-finding errors by 65% over passive virtual learning for simple routes (10% down to 3.5% errors)
  ▸ Interactive virtual learning decreased way-finding errors by 27% over passive virtual learning for complex routes (16.5% down to 12% errors)
  ▸ Interactive virtual learning decreased way-finding hesitations by 50% over passive virtual learning for simple routes (8% down to 4% errors)
  ▸ Interactive virtual learning decreased way-finding hesitations by 40% over passive virtual learning for complex routes (15% down to 9% errors)
  ▸ Interactive virtual learning decreased sketch mapping errors by 54% over passive virtual learning for complex routes (41% down to 19%)

▸ Ryan E, Poole C. *Impact of Virtual Learning Environment on Students' Satisfaction, Engagement, Recall, and Retention.* J Med Imaging Radiat Sci. 2019. https://doi.org/10.1016/j.jmir.2019.04.005.

  ▸ Interactive virtual learning increased engagement by 9% over traditional presentation learning (average score of 25.18 up to 27.48)
  ▸ Interactive virtual learning increased recall by 15% over traditional presentation learning (average score of 6.94 up to 8.00)
  ▸ Interactive virtual learning increased retention by 20% over traditional presentation learning (average score of 6.18 up to 7.43)

APPENDIX C: IMPACT OF SIGNALING ON KNOWLEDGE TRANSFER

▸ Patrick Albus, Andrea Vogt, Tina Seufert. *Signaling in virtual reality influences learning outcome and cognitive load.* Computers & Education, Volume 166, 2021. https://doi.org/10.1016/j.compedu.2021.104154.

  ▸ Signaling (annotating with text) in this study improved recall by 15%

▸ Sascha Schneider, Maik Beege, Steve Nebel, Günter Daniel Rey. *A meta-analysis of how signaling affects learning with media.* Educational Research Review, Volume 23, 2018. https://doi.org/10.1016/j.edurev.2017.11.001.

  ▸ Signaling improves retention by 42-64%
  ▸ Signaling improves recall by 22-43%
  ▸ Signaling improves engagement by 4-22%

APPENDIX D: IMPACT OF SEGMENTATION ON KNOWLEDGE TRANSFER

▸ Logie, M.R., & Donaldson, D. *Do doorways really matter: Investigating memory benefits of event segmentation in a virtual learning environment.* Cognition, Volume 209, 2021. https://doi.org/10.1016/j.cognition.2020.104578.

  ▸ Information segmented into virtual rooms resulted in a 52% increase in recall over non-segmented information (proportion recalled 31% up to 47%)

▸ Aidan J. Horner, James A. Bisby, Aijing Wang, Katrina Bogus, Neil Burgess. *The role of spatial boundaries in shaping long-term event representations.* Cognition, Volume 154, 2016. https://doi.org/10.1016/j.cognition.2016.05.013.

  ▸ Sequential information recall in context (same room) resulted in 21% improvement (40.6% up to 49.2%)

APPENDIX E: COMPETITION

TOOL	DESCRIPTION	NON-TECHNICAL	GIS	360 PHOTOS	3D MODELS
Kartorium	(+) Drag-and-drop interface (+) Import/reuse data & models (+) Embed multimedia and tags (+) Simple licensing structure (−) Less GIS flexibility	✓	✓	✓	✓
PowerPoint	(+) Widely used and supported (+) Embed multimedia (−) Passive knowledge transfer	✓	✗	✗	✗
Esri (ArcGIS)	(+) Widely used and supported (+) Powerful GIS ecosystem (−) Expensive & confusing licensing structure	✗	✓	✗	✓
Matterport	(+) LiDAR* = virtual tour (+) Internal hardware integration (+) Tags for annotations (−) Proprietary capture pipeline	✓	✗	✓	✗
Sketchfab	(+) Online 3D Model viewer (+) Support for major file formats	✓	✗	✗	✓

* Light Detection and Ranging (LiDAR) ** Matterport provides a 3D view of spaces captured with their proprietary capture pipeline, but the tool does not support user-specified 3D models.

APPENDIX F: COMPARABLES

COMPANY	EXIT	VALUE	DATE	REVENUE	DESCRIPTION
Matterport	Public	$2.56B	7/2021	$85.9M in 2020	Virtual property tour technology
Absorb LMS	Acquired	$500M	4/2021	S50M in 2020	Cloud-based learning management system
Flow-Cal	Acquired	$100M	3/2019	$11.5M	Oil and gas measurements software

APPENDIX G: CAP TABLE

Legal entity: Karta Software, LLC

MEMBER NAME	REPRESENTATIVE NAME	MEMBERSHIP PERCENTAGE
Karta Solutions, LLC	Jay Byam	59.4%
Jonathan Chronister	N/A	8.1%
Colton Anderson	N/A	7.2%
Joseph Byam	N/A	7.2%
Tern Consulting, LLC	Melanie Bladow	4.5%
Leon Bridges	N/A	4.0%
49th State Angel Fund	Melanie Lucas-Conwell	4.0%
Force 10, LLC	Casey Pape	2.0%
Sherwood Byam III and Deborah Byam, a married couple	N/A	1.8%
Russell Jackson and Laurie Jackson, a married couple	N/A	0.9%
Scott Anderson and Sari Anderson, a married couple	N/A	0.9%