
ECONOLITE
part of Umovity
Lost In The Data Forest:
Navigating the Ever-Changing Digital Landscape
ITS Washington
November 6-7, 2024 – Tacoma, WA
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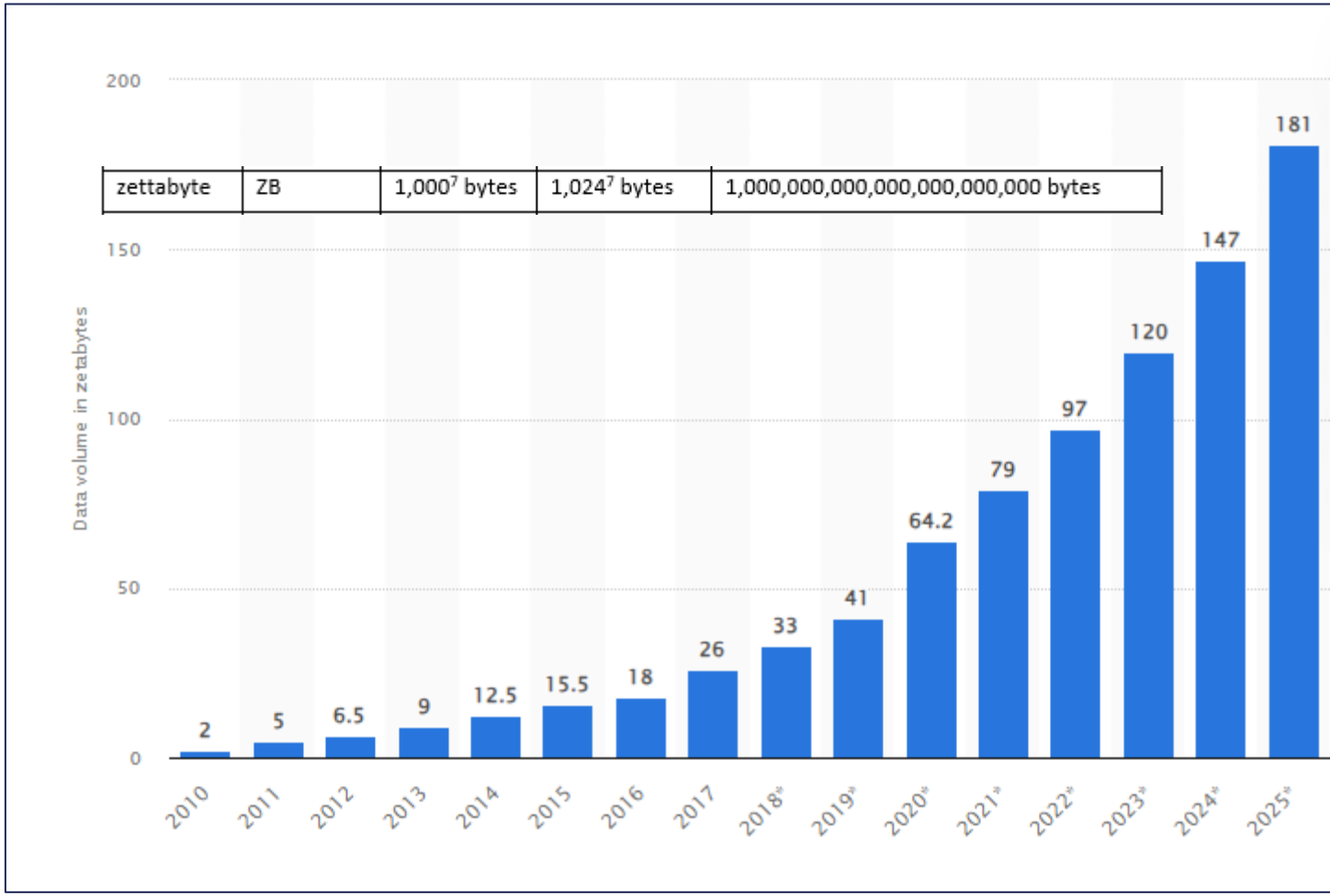
Explosive Growth In All Types of Data

› To Say It Has Been Massive would be an Understatement…

Unit	Abbreviation	Decimal Value	Binary Value	Decimal Size
bit	b	0 or 1	0 or 1	1/8 of a byte
byte	B	8 bits	8 bits	1 byte
kilobyte	KB	$1,000^1$ bytes	$1,024^1$ bytes	1,000 bytes
megabyte	MB	$1,000^2$ bytes	$1,024^2$ bytes	1,000,000 bytes
gigabyte	GB	$1,000^3$ bytes	$1,024^3$ bytes	1,000,000,000 bytes
terabyte	TB	$1,000^4$ bytes	$1,024^4$ bytes	1,000,000,000,000 bytes
petabyte	PB	$1,000^5$ bytes	$1,024^5$ bytes	1,000,000,000,000,000 bytes
exabyte	EB	$1,000^6$ bytes	$1,024^6$ bytes	1,000,000,000,000,000,000 bytes
zettabyte	ZB	$1,000^7$ bytes	$1,024^7$ bytes	1,000,000,000,000,000,000,000 bytes
yottabyte	YB	$1,000^8$ bytes	$1,024^8$ bytes	1,000,000,000,000,000,000,000,000 bytes

Volume of Data/Information Created, Captured, Copied, and Consumed Worldwide from 2010 to 2020, with Forecasts from 2021 to 2025



Source: Statista 2024

The Yin & Yang of Data

- How do we Maximize the Benefits of Data While Minimizing the Risks?
  - Privacy Implications vs. Societal Benefits
  - Trusted Users vs. Bad Actors
- Larger and Newer Data Sets Allow us to Answer New Questions…Even in Real-Time
- Cost Effectiveness vs. Depth of the Data
  - Scalability vs. Granularity

Source: Images created using Midjourney

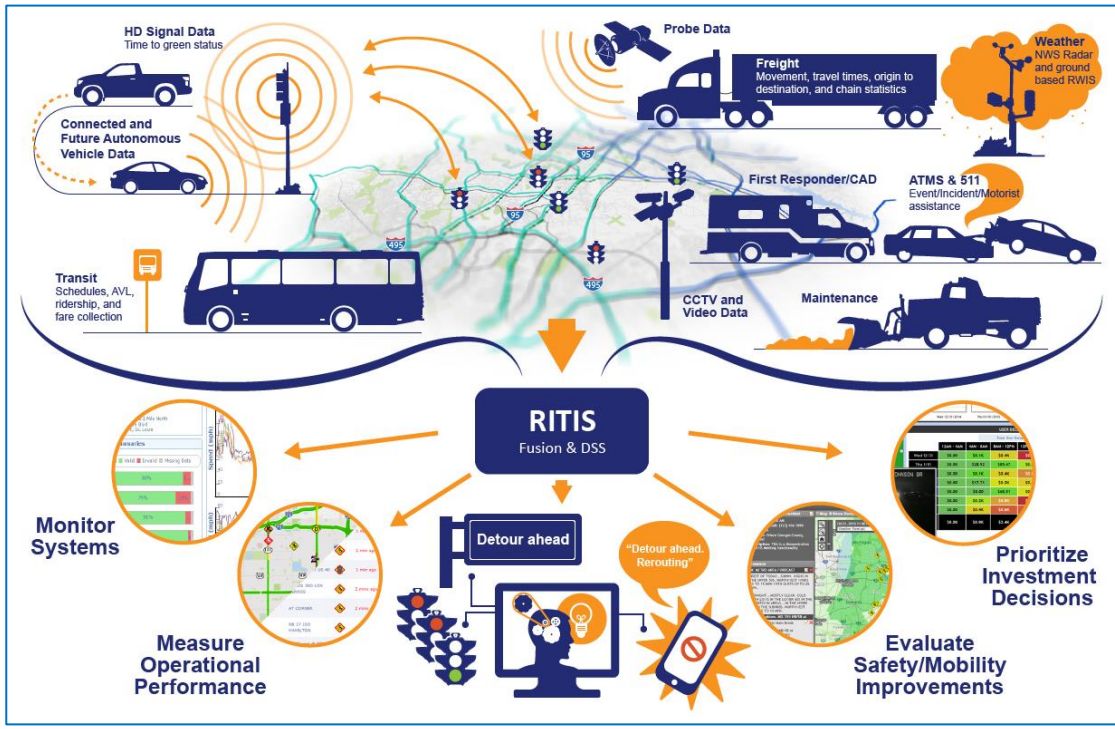
The Yin & Yang of Data (cont.)

- Ownership vs. Subscription Models
  - "Black Box" Concerns
  - Resources for Storage, Processing, Analyzing, Data Requests (FOIA), etc.
  - Procurement Complications
- Some Types of Data Can Create New Potential Liabilities for Agencies
  - "If we know about it, we have to fix it"

Source: Images created using Midjourney

Usual Suspects: A Huge Mix of Data Sources

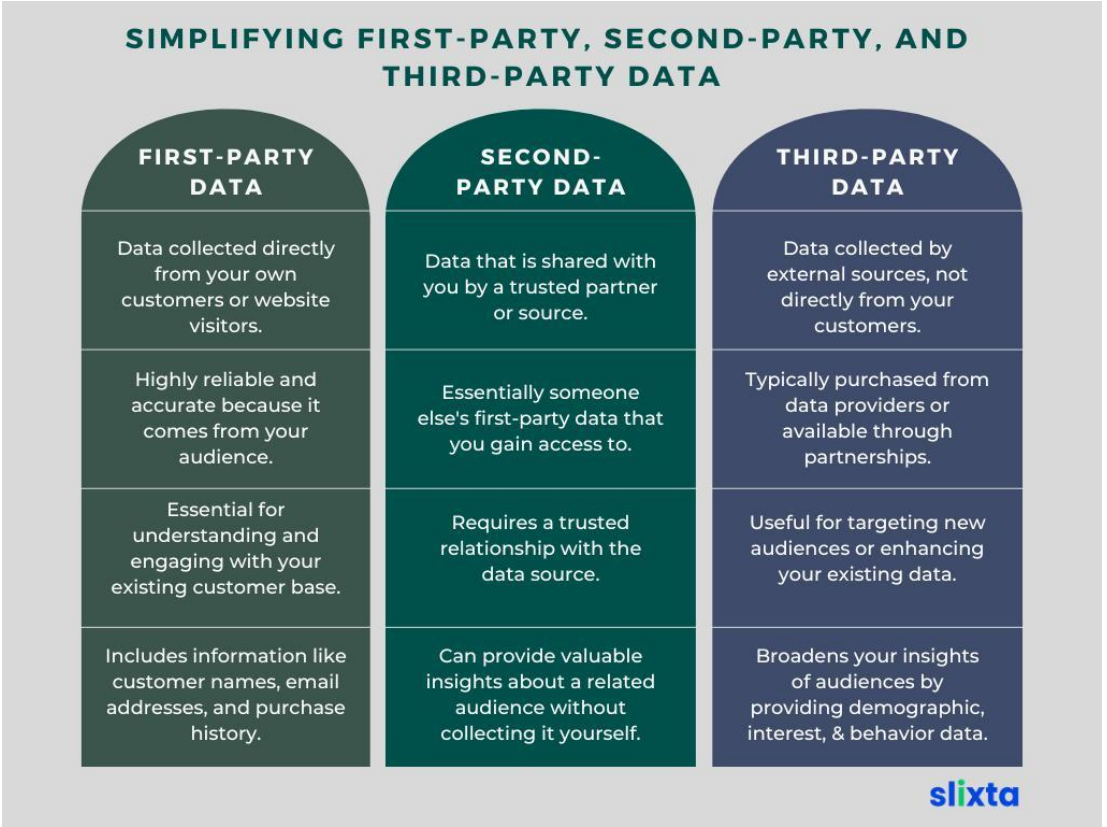
- Traditional Data Sources (AVL Systems, Loops, Cameras, Radar, etc.)
  - With New Applications, e.g., VRU Safety Metrics
- Newer but Established Data Sources
  - Location Based Services (LBS) Data
  - LIDAR
- Latest Expansion in Data Sources
  - Direct from Vehicle ADS Systems and Sensors
- Which Ones are the Best?
  - Horses for Courses – Planning vs. Operations



Source: RITS.org (UMD CATT Lab

Third Party Data – a Brief (and Incomplete) History

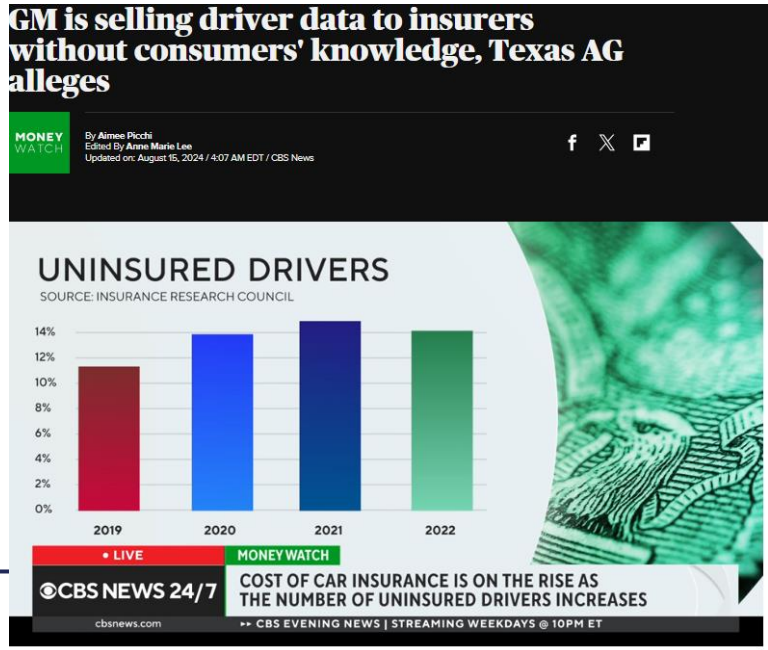
- HERE (formerly Navteq) – founded 1985, offering LBS 2012
- INRIX –founded 2005 offering LBS data
- StreetLight Data founded 2011 offering LBS data insights (*now has rights to GM data*)
- TomTom – founded 1991, offering LBS in 2012
- Geotab – Founded 2000, Large Provider of Freight Data
- WEJO – Founded 2013, offering LBS in 2021
- Arity – Founded 2016, Allstate spinoff using LBS Insurance App data
- Safegraph – Founded in 2016 and offering LBS Data



The Chaotic Data Marketplace

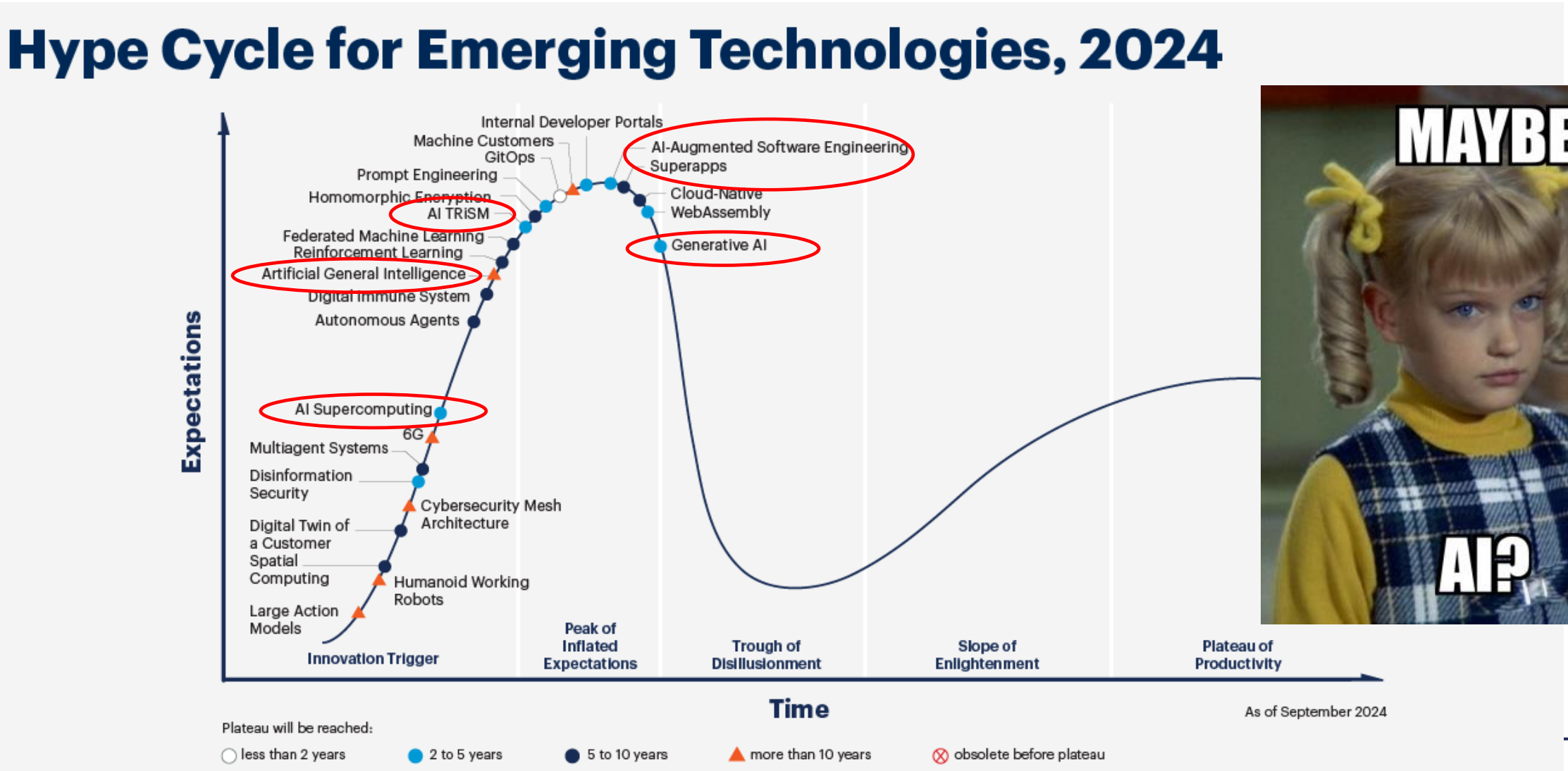
- Remember wejo?
  - Founded 2013 – Funded by GM
  - GM Acquires 35% Stake 2019
  - Filed for Bankruptcy May 2023
- Impacts of New Privacy Laws/Bad Decisions
  - GDPR & CCPA
- Location Based Services (LBS) Data (*AKA Cell Phone Based Data*)
  - Heavily used by numerous companies and agencies
  - 2023 - Became *Much* Less Useful Due to Privacy Concerns and "Synthetic" Data Providers

Source: Image created using Midjourney



Source: CBS News Online

What's Next?



Source: Gartner

Gartner

So Where Do We Go From Here?

- Don’t Wait for AI to Solve your Problems
- Seek better Synergies between Hardware and Software
  - “Best of Both Worlds”
- Data and Data Collection Should be Managed as a Portfolio
  - Do you *really* need to own everything?
- Don’t be Afraid of Subscriptions
  - Make Friends with Your IT Department

Source: Alamy

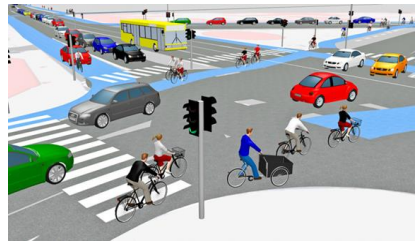
Example: Dynamic Multimodal Network Management

Digital Twin

Real world operational SaaS providing advanced ATMS functions

Virtual Controller functioning as real-world environment

Simulation that enables planning and "what if" scenarios



CNTM

EOS

Vsi

Operations

Planning

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Conclusions

- Changes in Data Will Continue…Only Faster
- Hybrid Solutions (Hardware & Software) Will Offer the Best Value for the Next 5-10 Years
- Need for Continuous Learning about New Data and Uses
- Keep an Eye on Automotive Data
- Trust but Verify
- COTS likely the better Choice unless doing Something Truly Unique

Source: Image created using Midjourney

Questions?

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