

One Molecule To Rule Them All

BaFe

Amazon Galcier

Alternate Media

Licensee

HP

IBM

Quantum

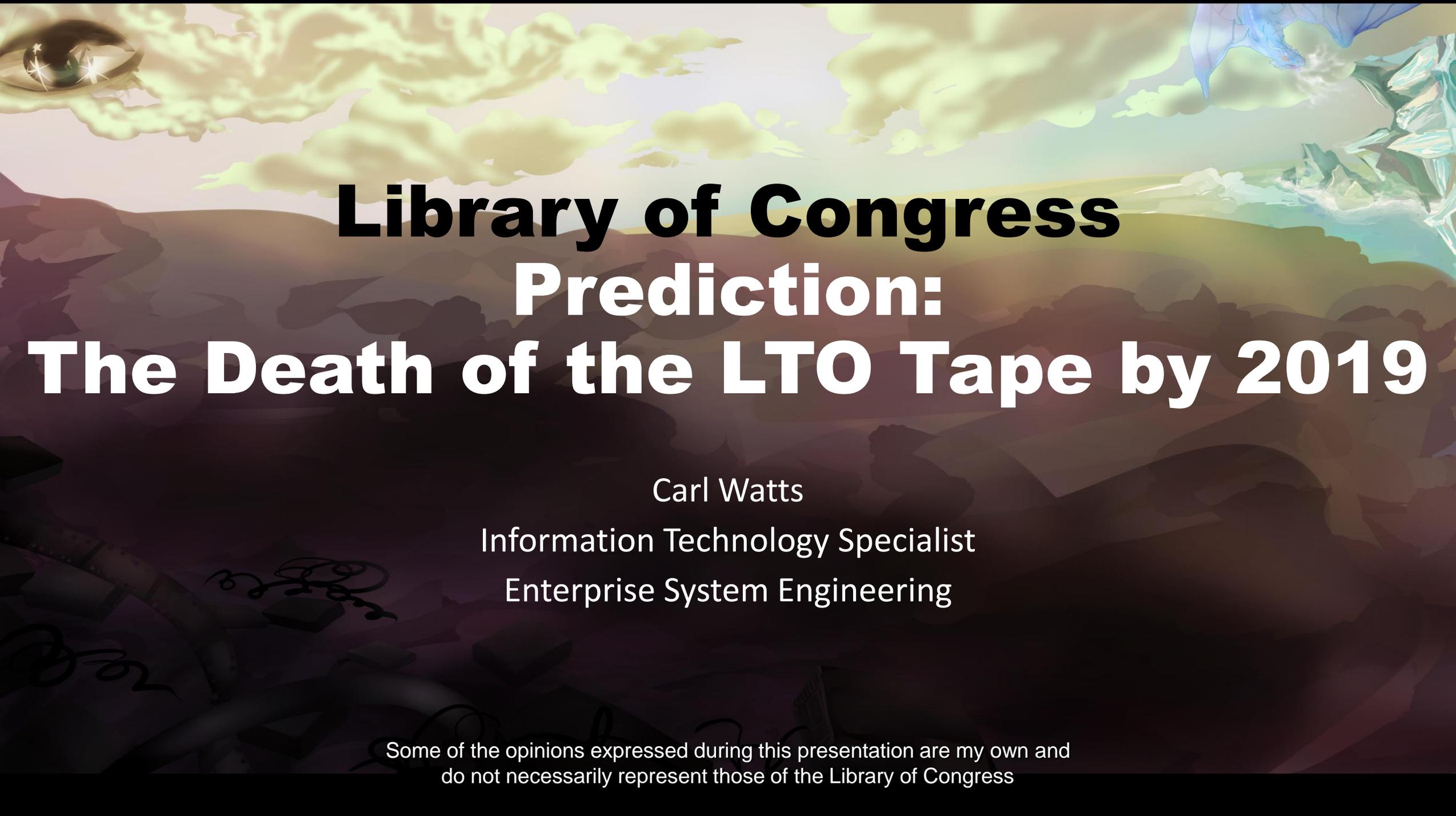
Backup

Archive Tape

HSM

# Four Horsemen of the Tape Apocalypse





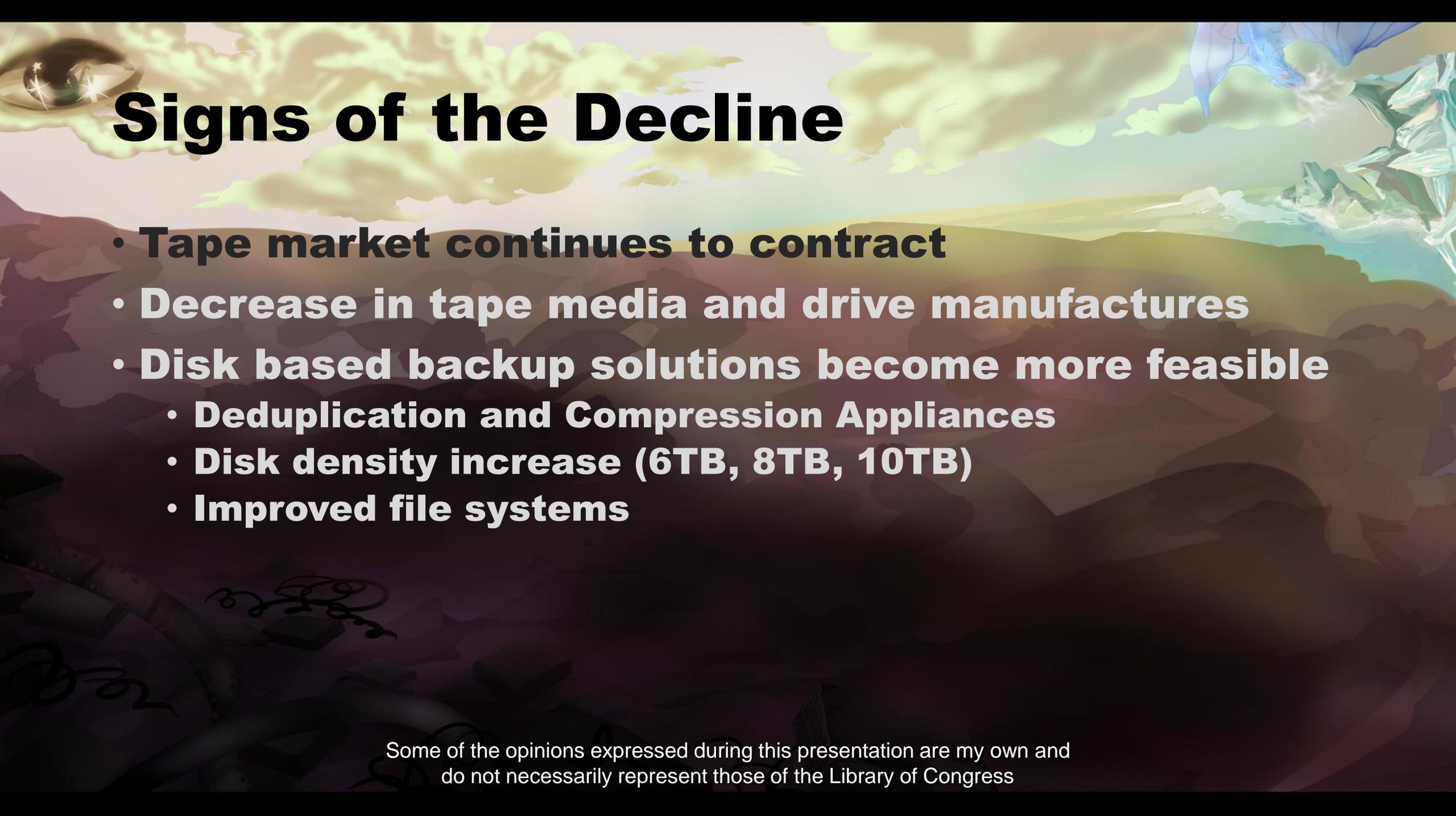
# **Library of Congress** **Prediction:** **The Death of the LTO Tape by 2019**

Carl Watts

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Enterprise System Engineering

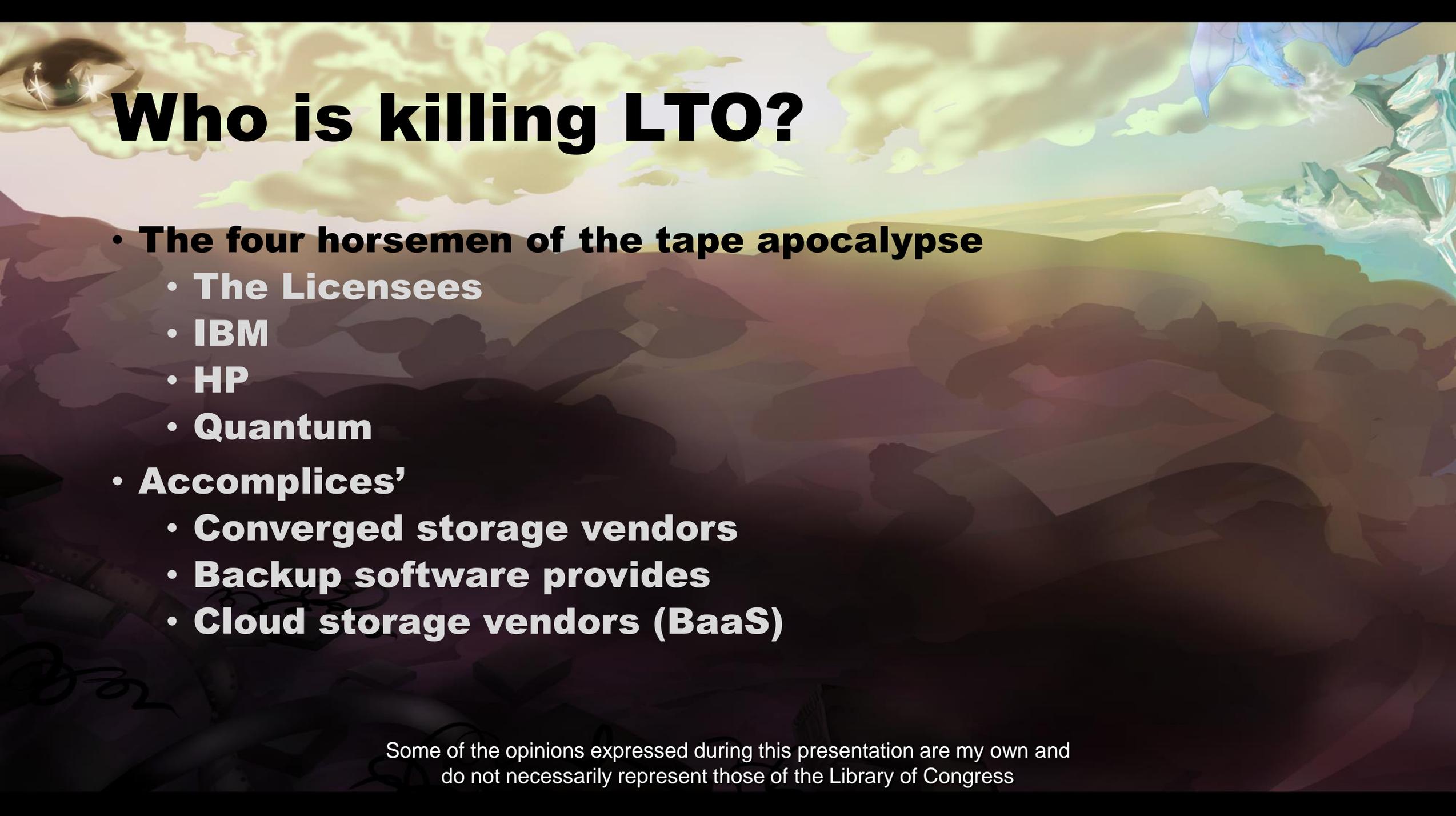
Some of the opinions expressed during this presentation are my own and do not necessarily represent those of the Library of Congress



# Signs of the Decline

- **Tape market continues to contract**
- **Decrease in tape media and drive manufactures**
- **Disk based backup solutions become more feasible**
  - **Deduplication and Compression Appliances**
  - **Disk density increase (6TB, 8TB, 10TB)**
  - **Improved file systems**

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# Who is killing LTO?

- **The four horsemen of the tape apocalypse**
  - **The Licensees**
  - **IBM**
  - **HP**
  - **Quantum**
- **Accomplices'**
  - **Converged storage vendors**
  - **Backup software providers**
  - **Cloud storage vendors (BaaS)**

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# Examples of the horsemen...

- **The Licensees – (Death)**

- **Tandburg Data and other have stopped making drives**
- **Media companies like TDK and BASF have left the market**
- **Most licensees have traded tape for disk base solutions**

*Licensee*

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# Examples of the horsemen...

- **IBM – (War)**
  - **Last of the full drive manufactures**
  - **Inline dedupe and compression**
  - **Enterprise and consumer tape share media type (BaFe)**
  - **IBM Softlayer (cloud offering)**
  - **IBM CEO is re-evaluating their hardware**
    - **Does IBM real need two tape drives?**
    - **What does IBM gain by delivering LTO7?**
    - **What does IBM loss if they stop manufacturing LTO?**



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# Examples of the horsemen...

- **HP - (Famine)**
  - **Massive lay-offs in 2015**
  - **Tape not core to their business**
  - **OEM drive parts and small tape libraries**
  - **De-dupe and data compression appliances**



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# Examples of the horsemen...

- **Quantum (Pestilence)**
  - OEMs parts to make LTO drives
  - Markets de-dupe and disk base backup solutions
  - Might be profitable as a company in 2015 (finally)\*



\* [http://www.theregister.co.uk/2014/07/24/quantum\\_results\\_q1\\_fy2015/](http://www.theregister.co.uk/2014/07/24/quantum_results_q1_fy2015/)

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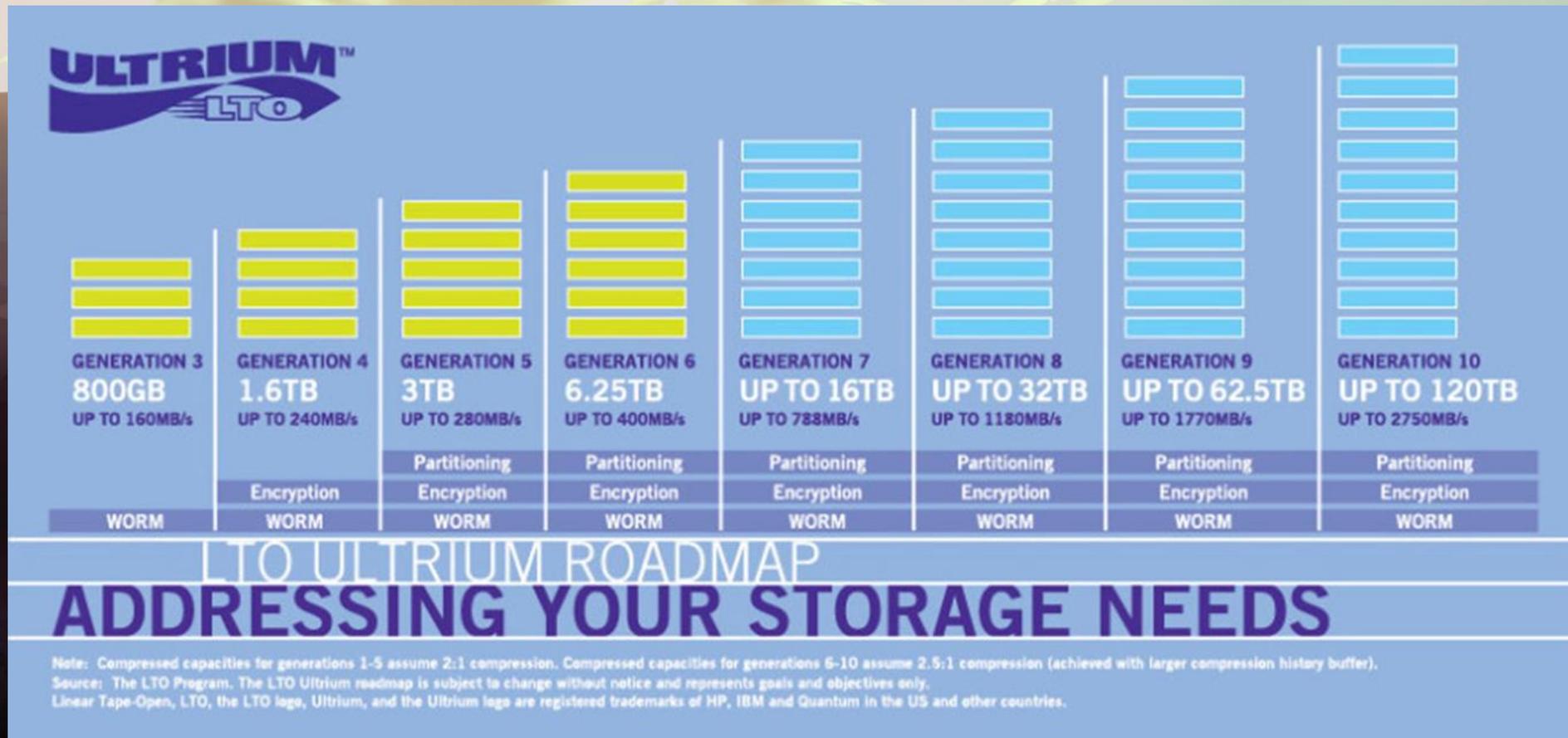


# Examples of the accomplices'...

- **Accomplices'**
  - **Converged storage system vendors**
    - **Deduplication**
    - **Data compression**
  - **Backup software providers**
    - **Block level deduplication**
    - **File compression**
    - **VLT and backup to disk solutions**
  - **Cloud Services**
    - **Backup as a Service**

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# But they have a roadmap!

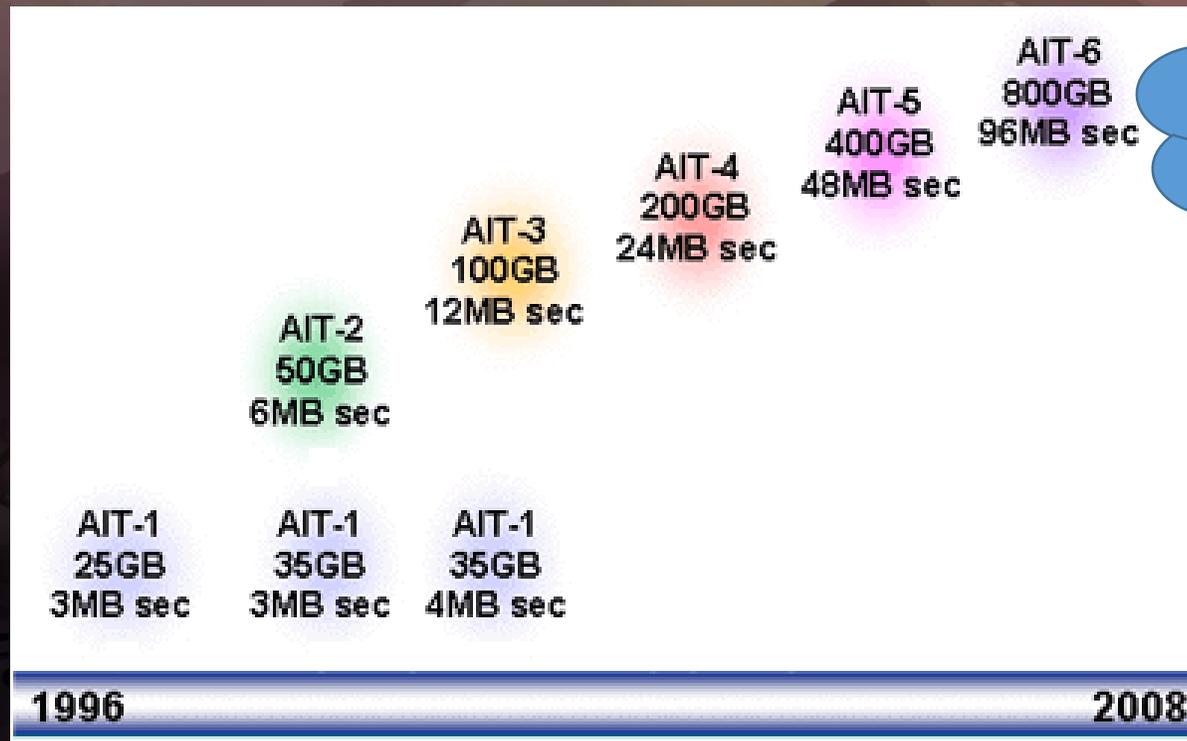


\* Roadmap available @ <http://www.lto.org/technology/what-is-lto-technology/>

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# But they have a roadmap!

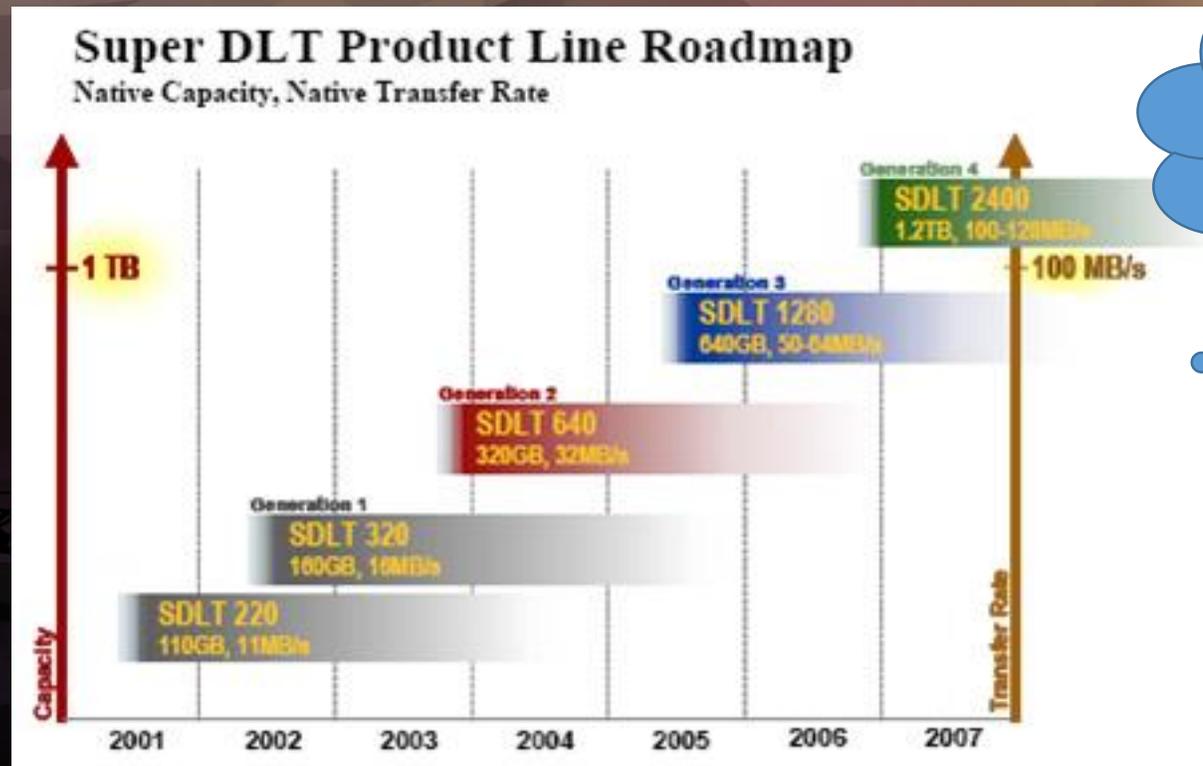
- **Sony AIT had roadmaps before their formats was cancelled**



AIT-6 was never produced

# But they have a roadmap!

- **Quantum Super DLT had a roadmap and they are one of the sponsors of this LTO roadmap**



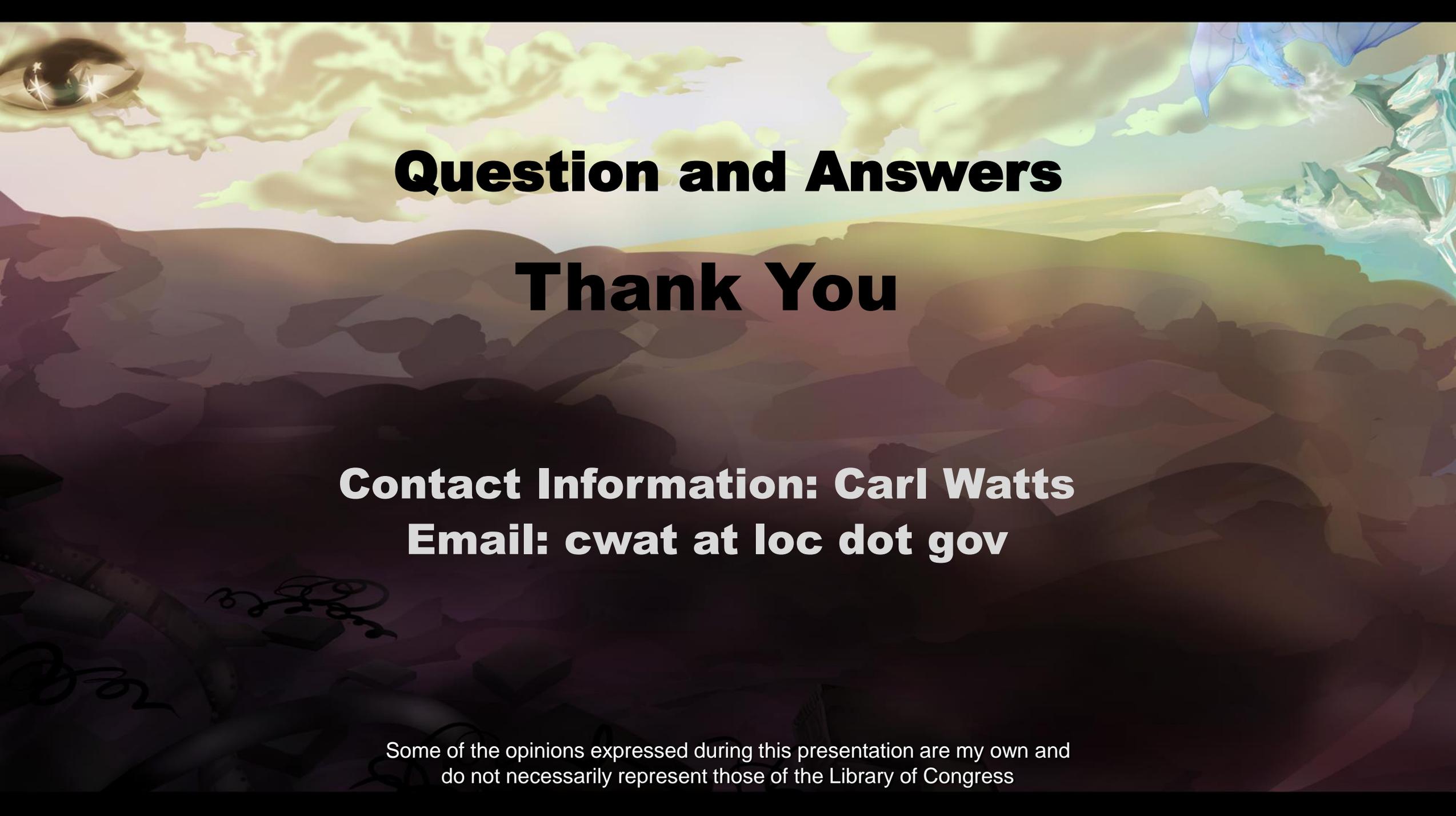
SDLT 1280 and 2400 were never produced

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# **So am I saying tape is dead?**

- **No, tape will continue for the foreseeable future**
- **There will be only one molecule for now, BaFe**
- **A second media source is need**
  - **Alternate metals base media (CoCrPt)**
  - **Optical Disc or Tape**
  - **Stainless Steel**
  - **3D Optical disc (like Sapphire / Quartz)**
  - **something**

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A surreal, colorful landscape. In the top left, a large, detailed eye with a green iris and a black pupil is set against a sky of yellow and orange clouds. In the top right, a blue dragon with white wings is flying. The middle ground shows rolling hills in shades of brown, orange, and yellow. In the bottom left, a dark, stylized cityscape is visible, with a prominent building that has a signature on its side. The overall scene is vibrant and fantastical.

# **Question and Answers**

## **Thank You**

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