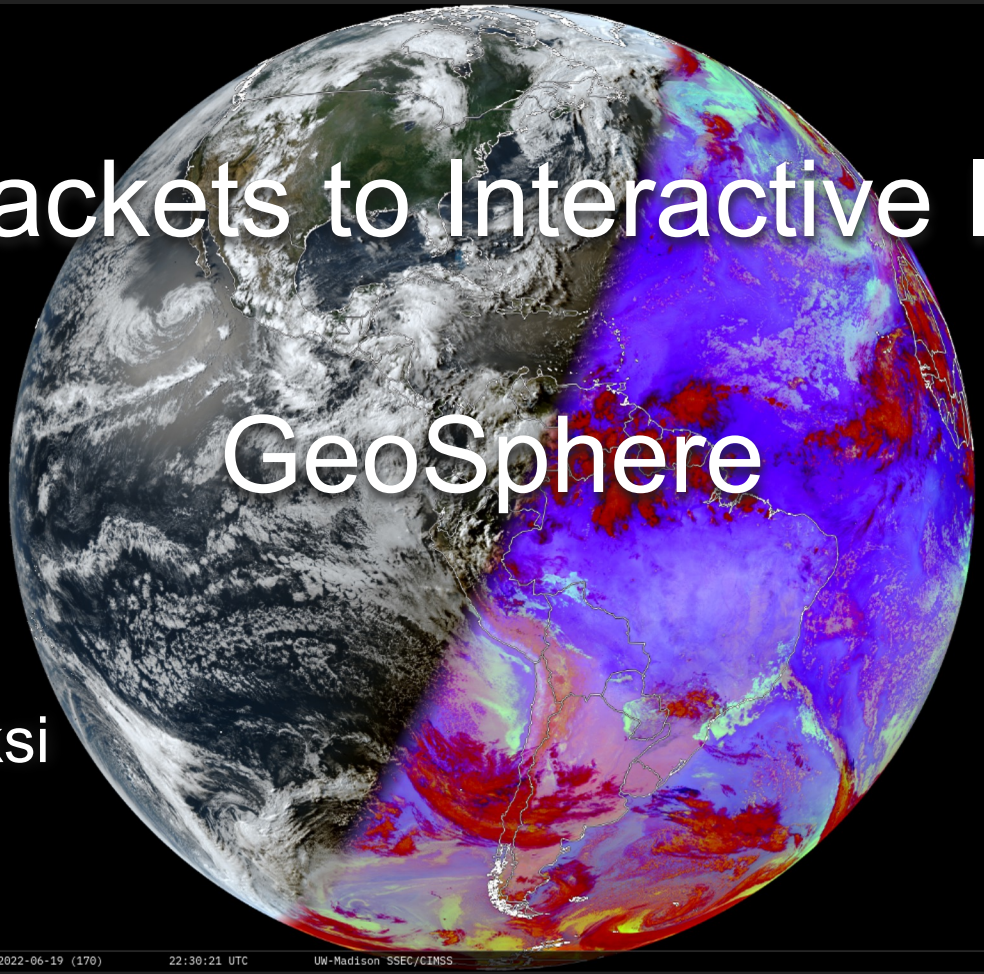
CSPP GeoSphere

From Packets to Interactive Imagery

GeoSphere



David Hoese
Clayton Suplinksi

Graeme Martin
Ray Garcia
Will Roberts

SSEC

David Hoese

- Software developer - SSEC/UW-Madison
- Lead developer on
  - GeoSphere
  - Geo2Grid/Polar2Grid
  - SIFT
- Open source developer and contributor
  - Satpy
  - Pyresample
  - VisPy
  - …others

The rest of the team

Clayton Suplinski

Frontend developer

Ray Garcia

Backend developer

Will Roberts

Backend developer

Graeme Martin

Principal Investigator, tester, proposal writer, report writer

Scott Nolin and **Jesse Stroik**

Technical computing and cluster fixers

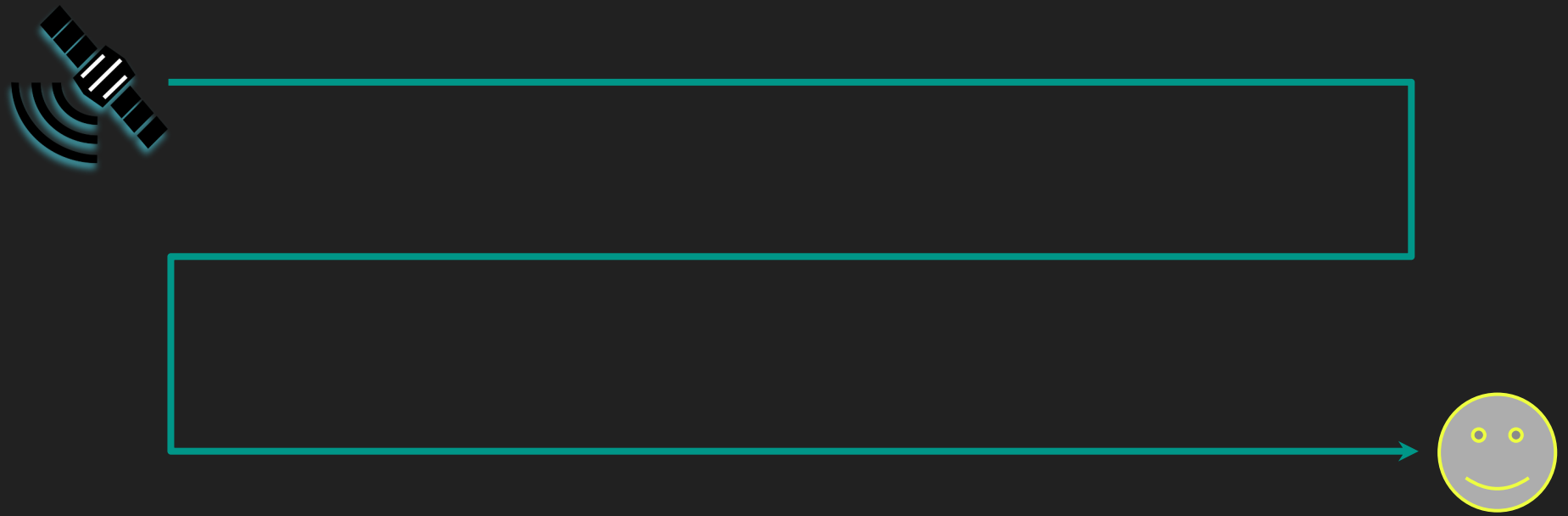
Project Goals

- Convert GOES-ReBroadcast (GRB) to image tiles quickly (low latency)
- Use high-quality imagery created with CSPP Geo Geo2Grid software
- Cloud-friendly development with multiple environments (commercial cloud, self-hosted) in mind
- Make a good-looking website with a **simple** UI
- Do it on a budget
  - 2 developers
  - 1 self-hosted server
- Learn “Stuff” (Kubernetes)
- Phase 2: Make it better (GOES-17, video sharing, optimizations, etc)

DEMO!!!

Evolution of GeoSphere

Evolution of GeoSphere - Phase 1



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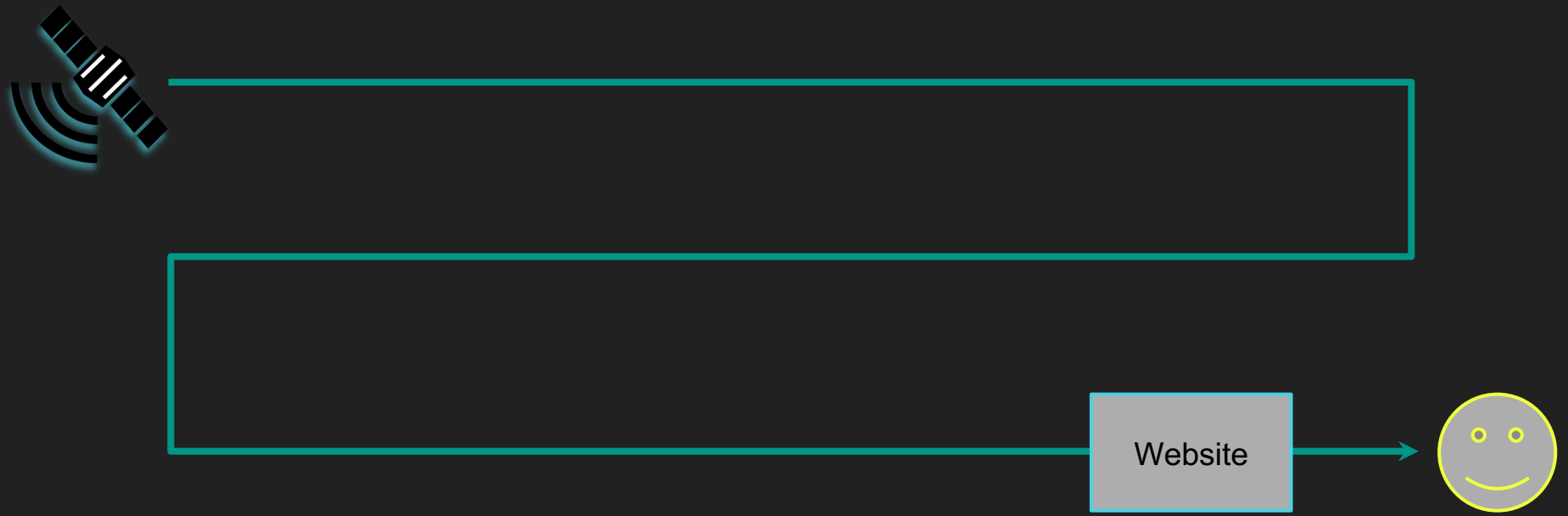

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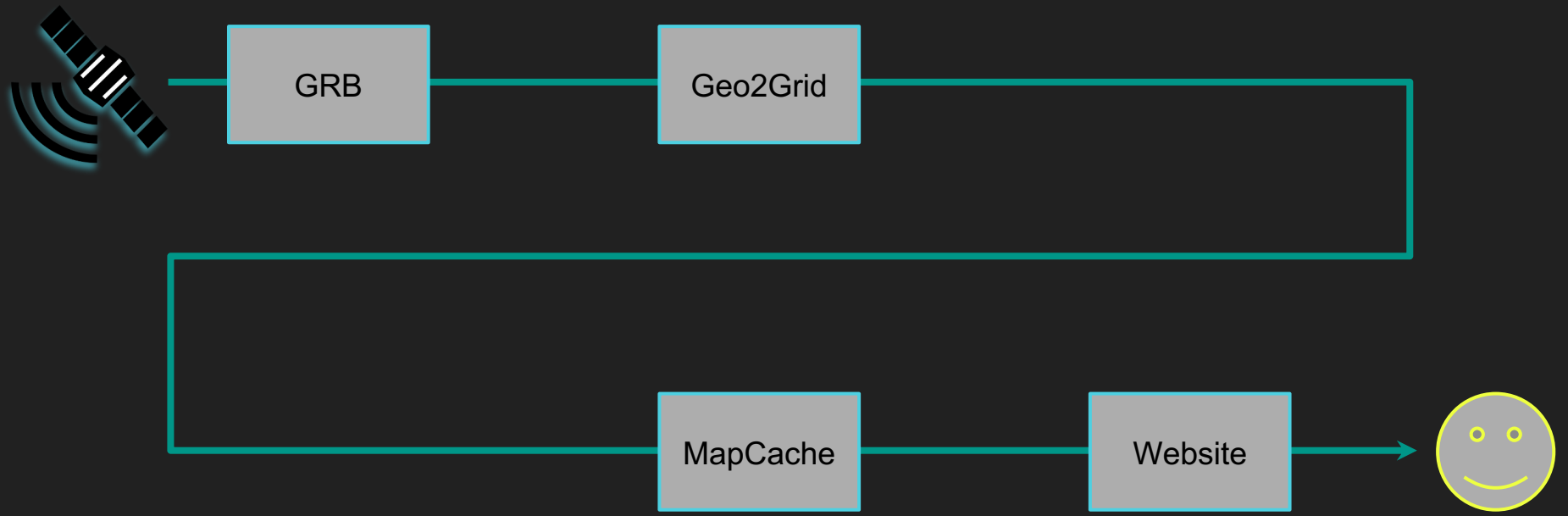

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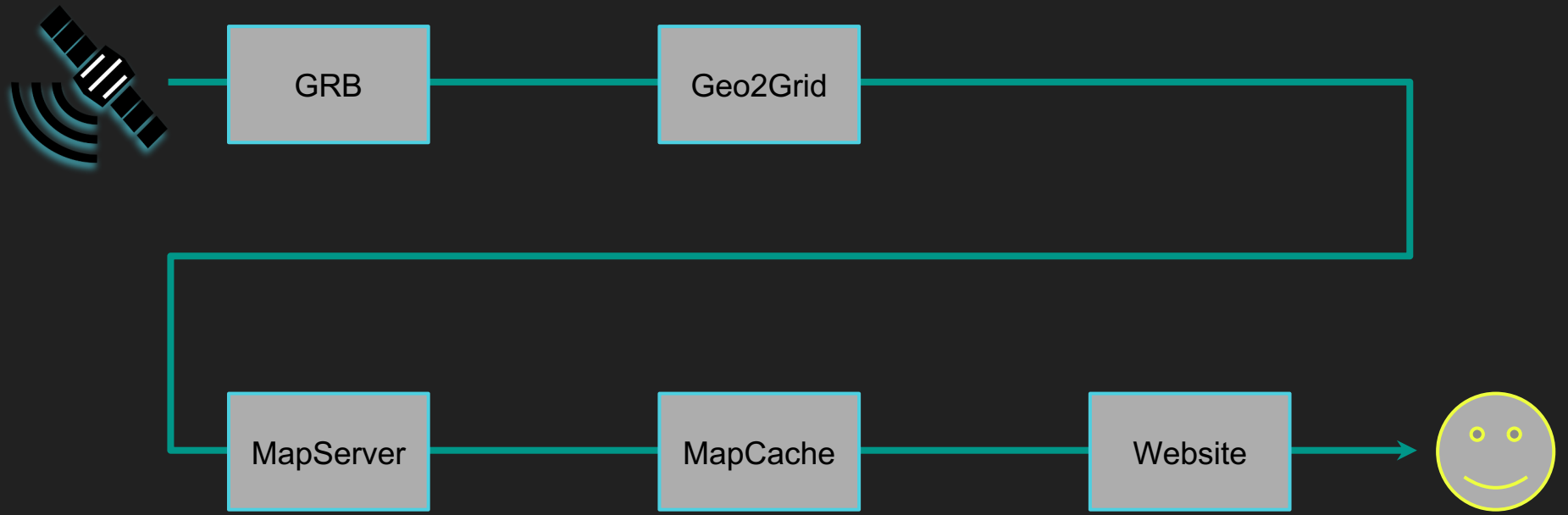

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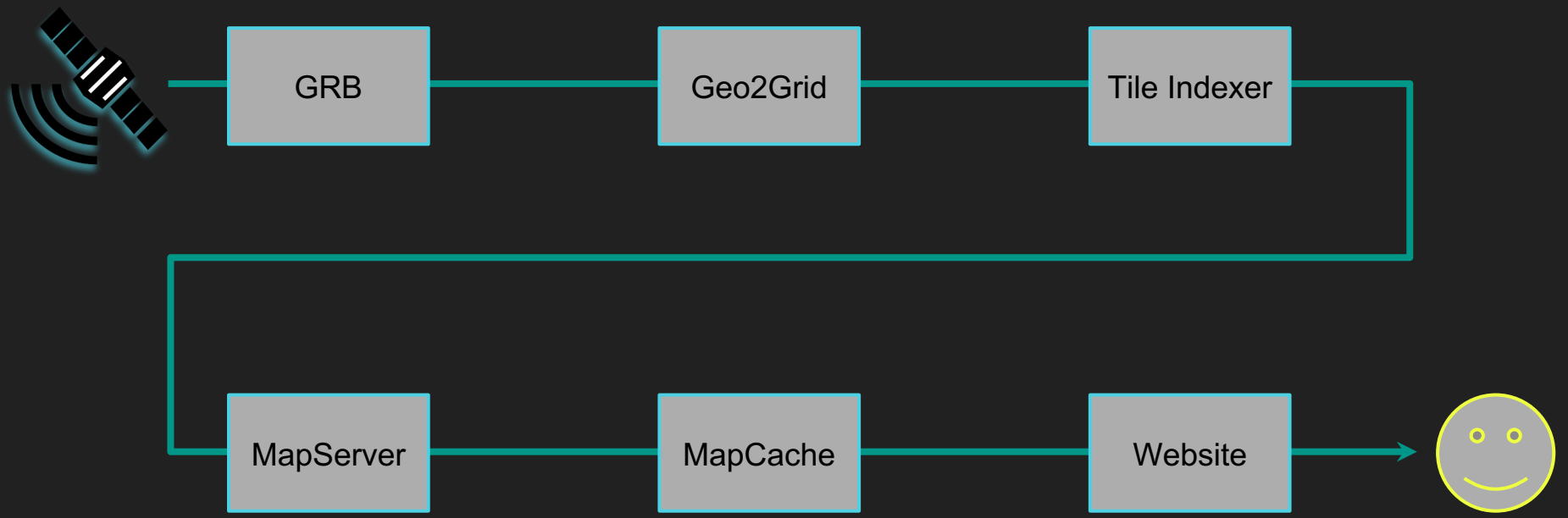

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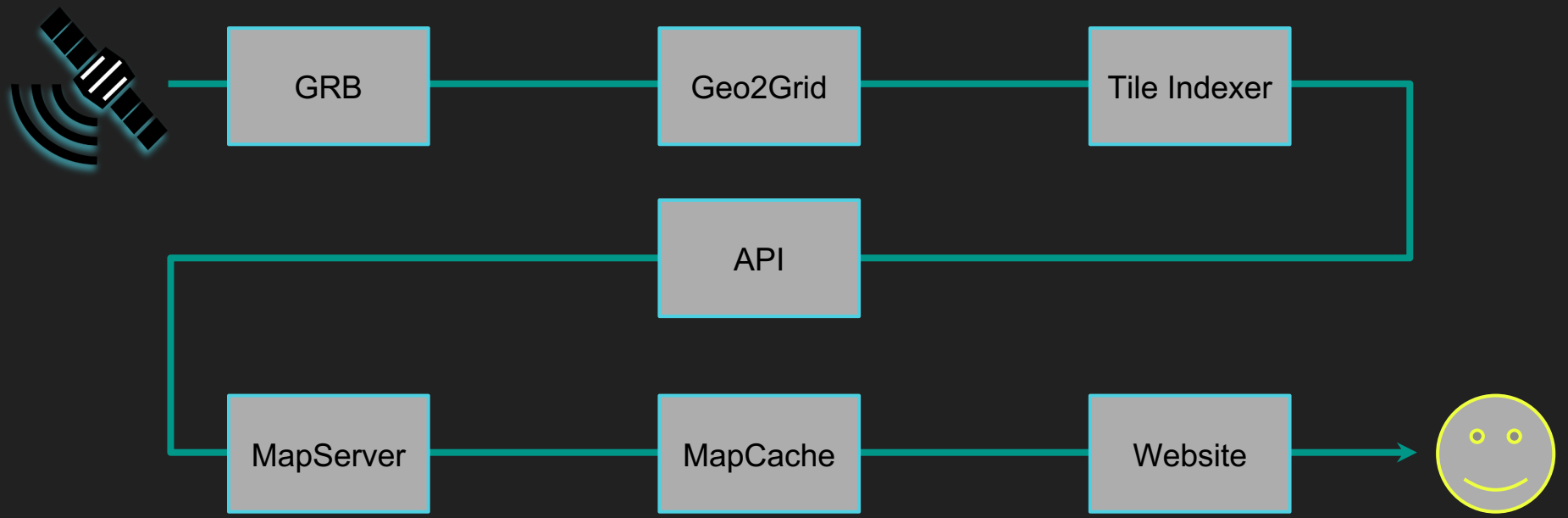

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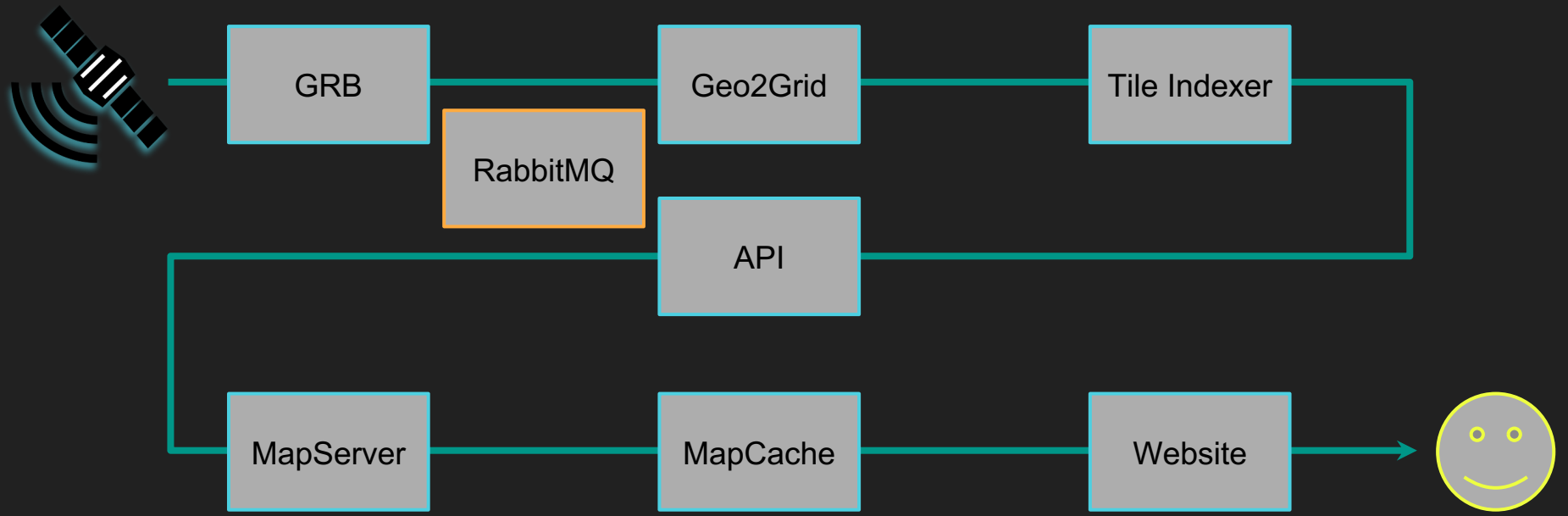

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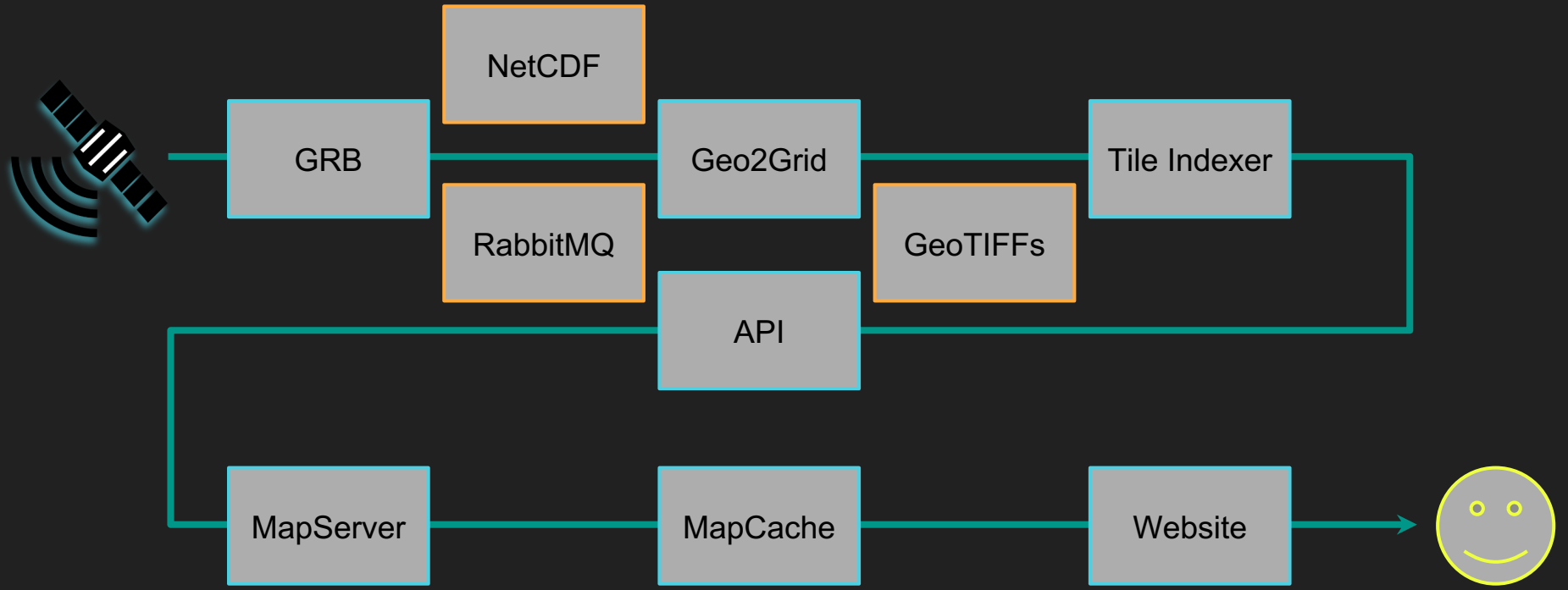

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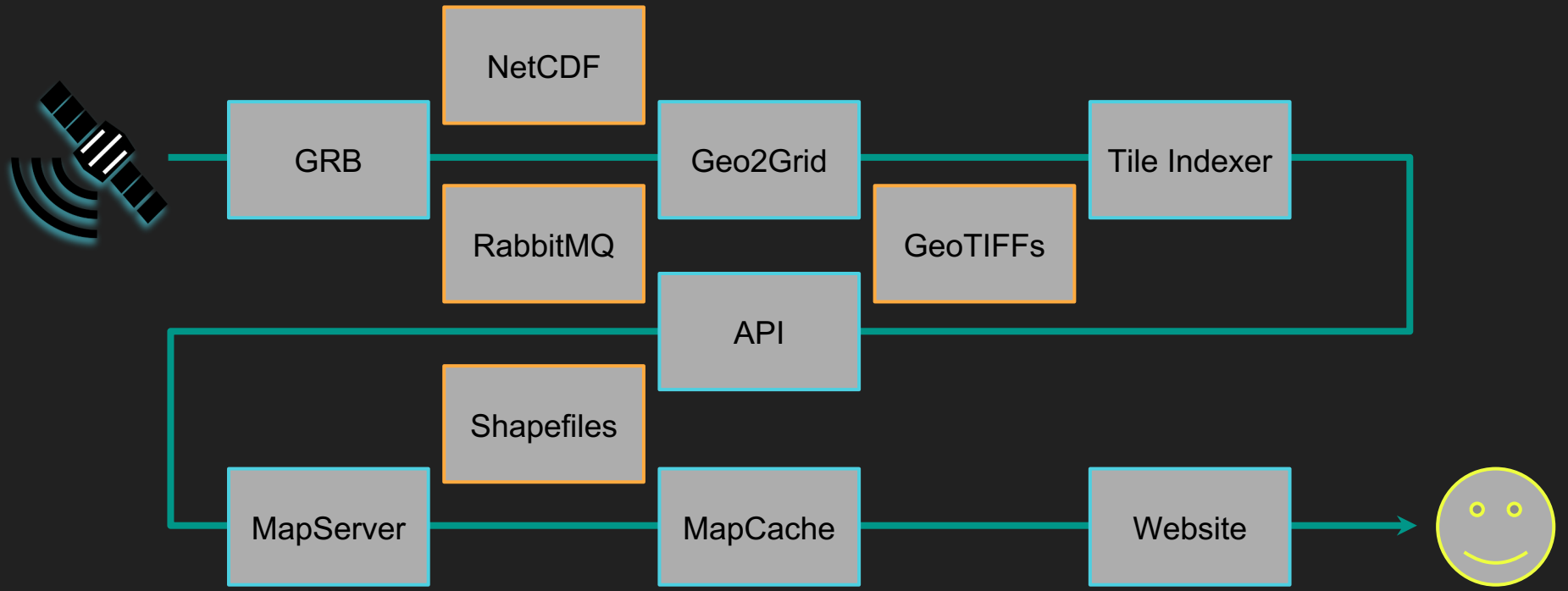

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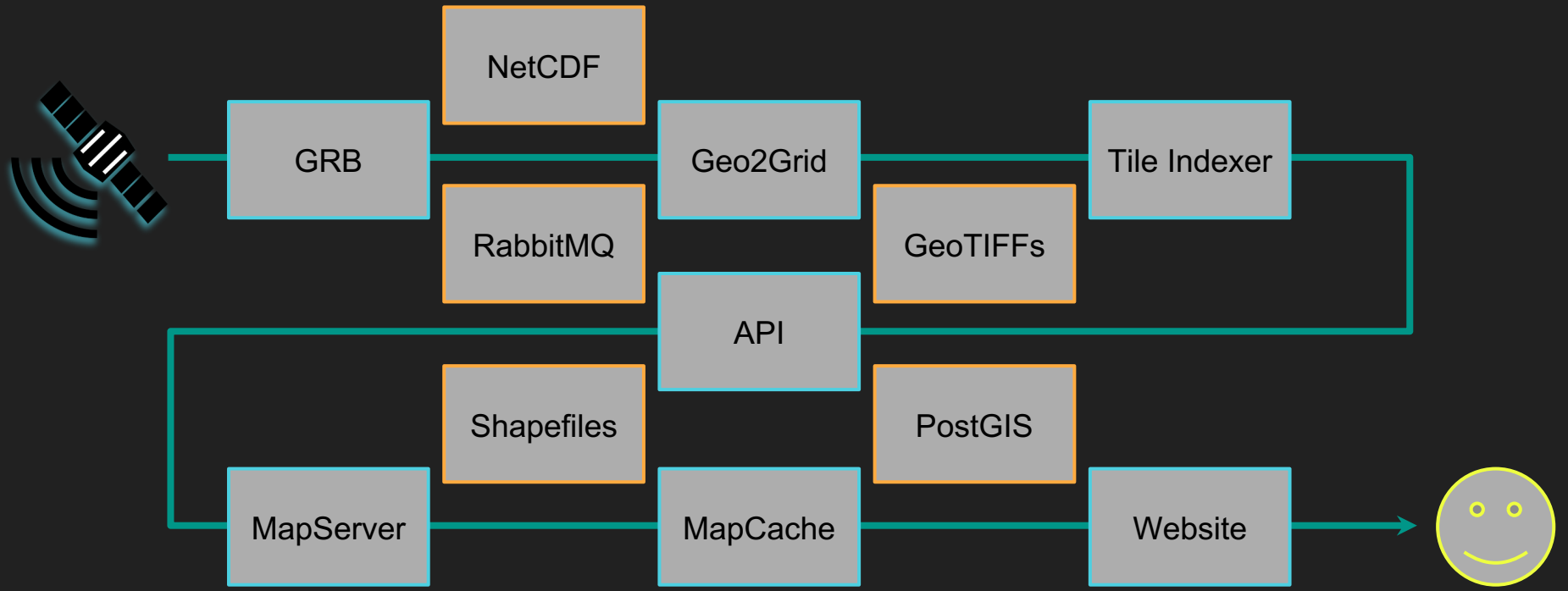
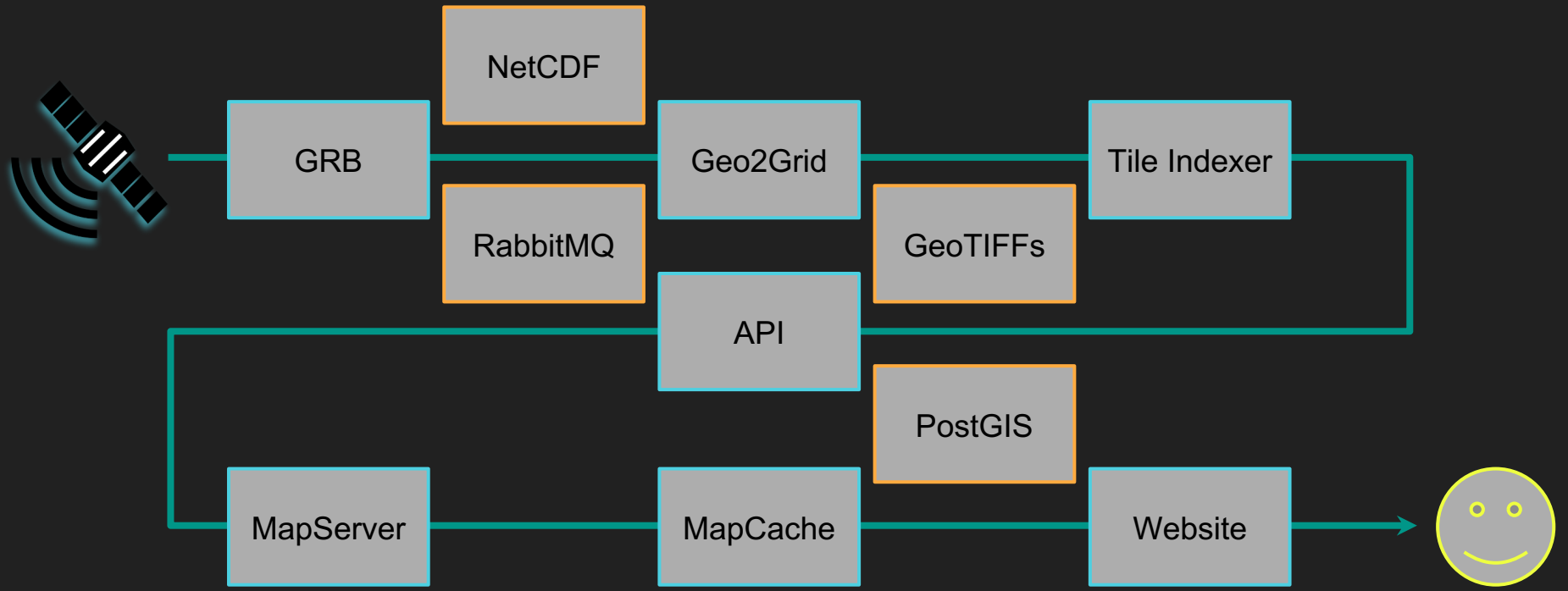
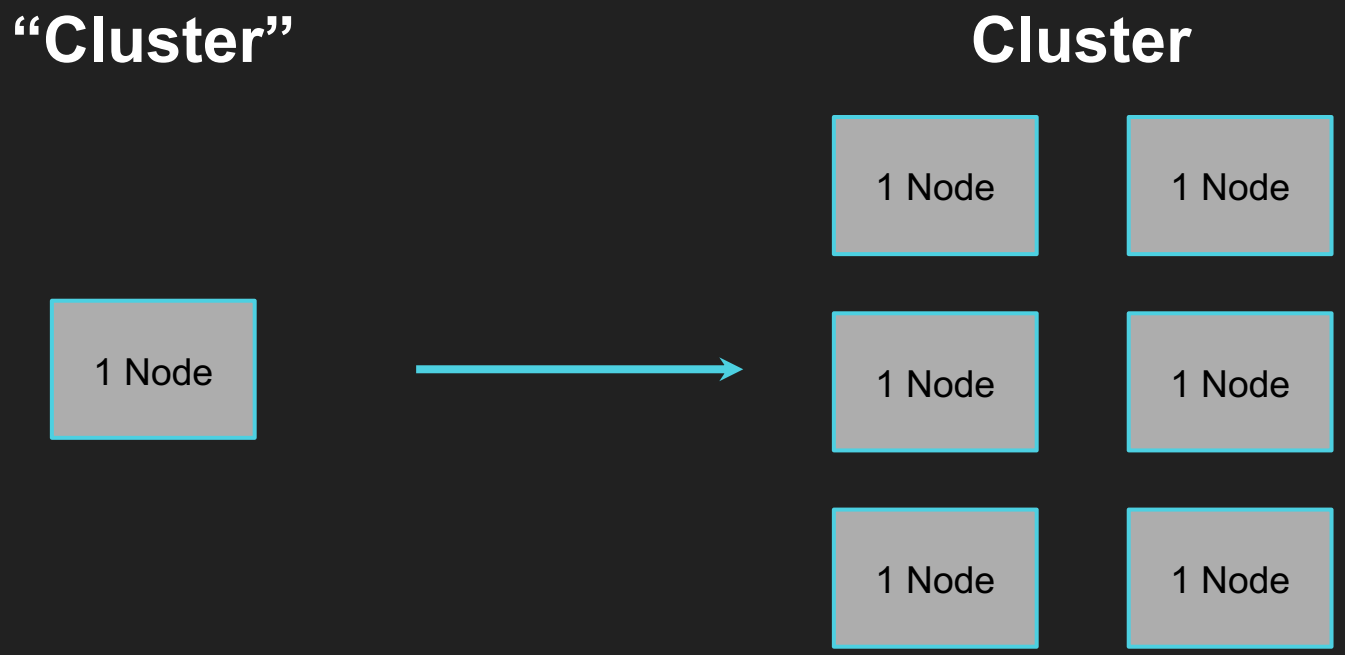


Evolution of GeoSphere - Phase 2



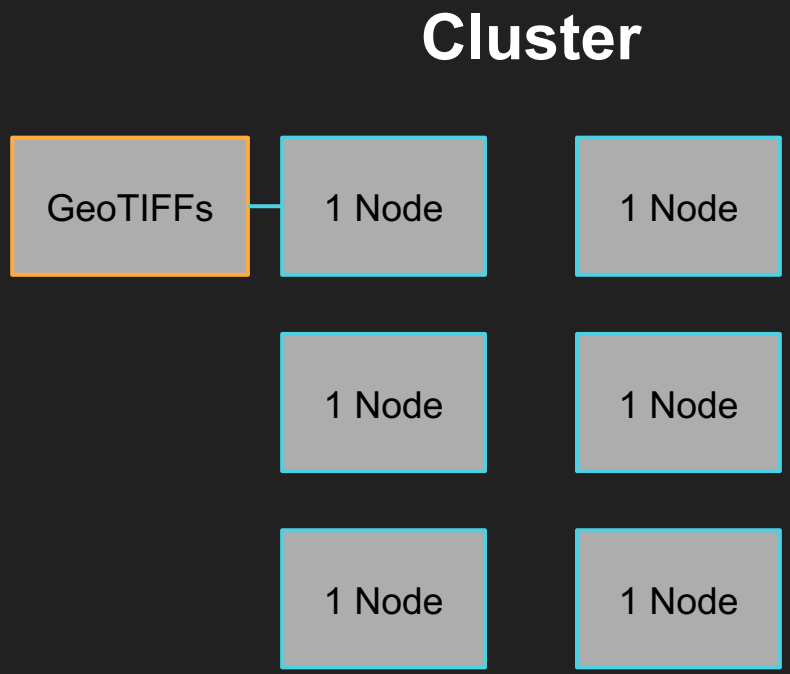
Evolution of GeoSphere - Infrastructure



Future - Finishing up Phase 2

- Upgrade Geo2Grid to 1.1 beta ✓
- Add MP4 video generation ✓
- Switch from CGI scripts to FastAPI ✓
- GOES-17 | GOES-18 → GOES-West
- Optimizations
  - Larger tiles
  - JPEG compression
  - Background processing on the client
- More products (ABI L2, other RGBs, etc)
- S3 storage backend

Multi-node processing - I lied



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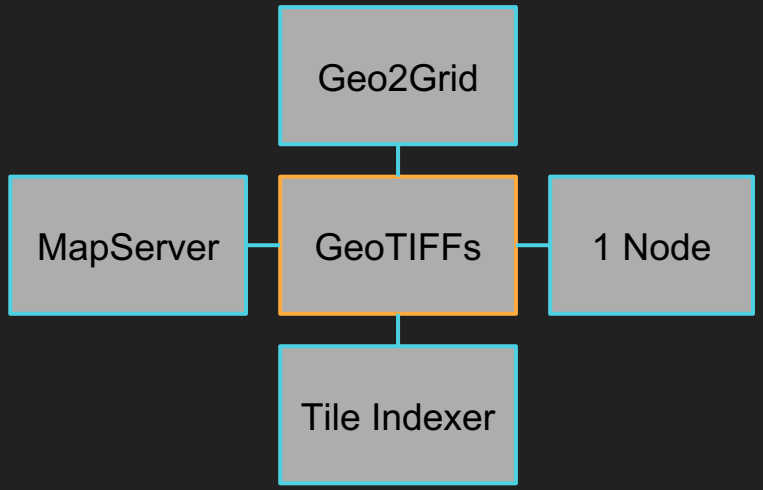

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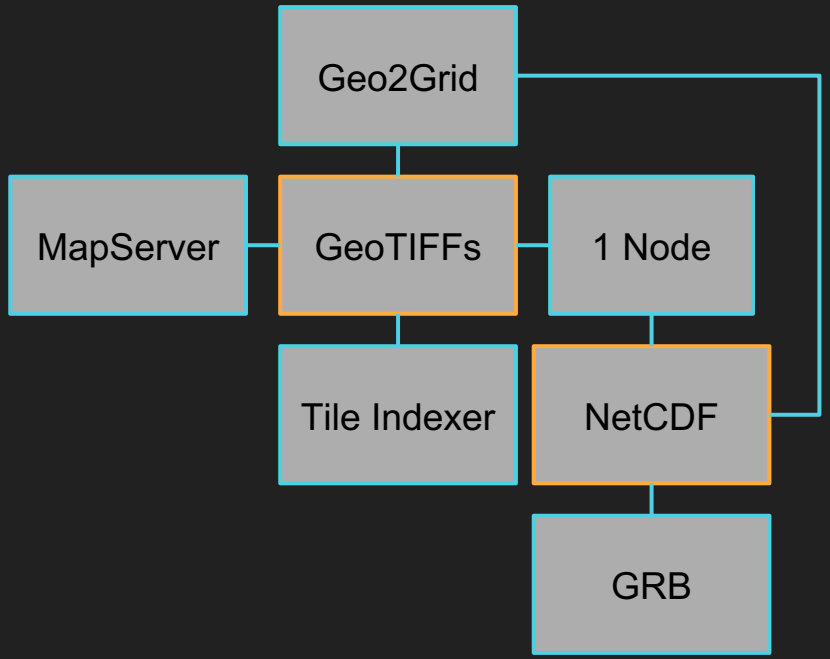
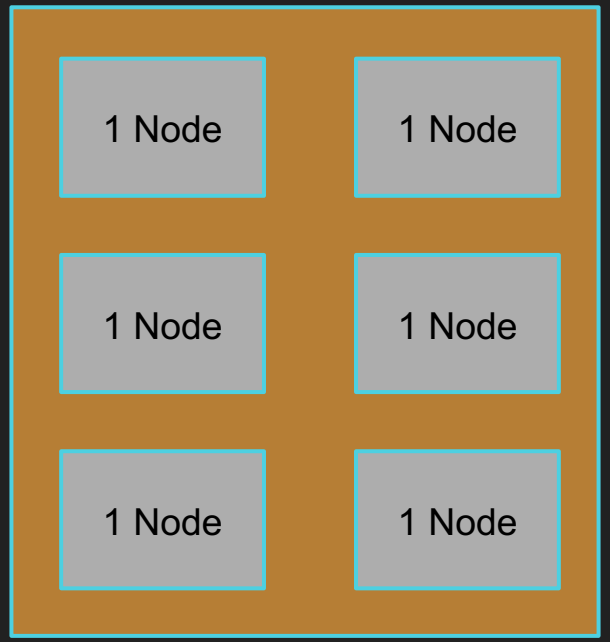
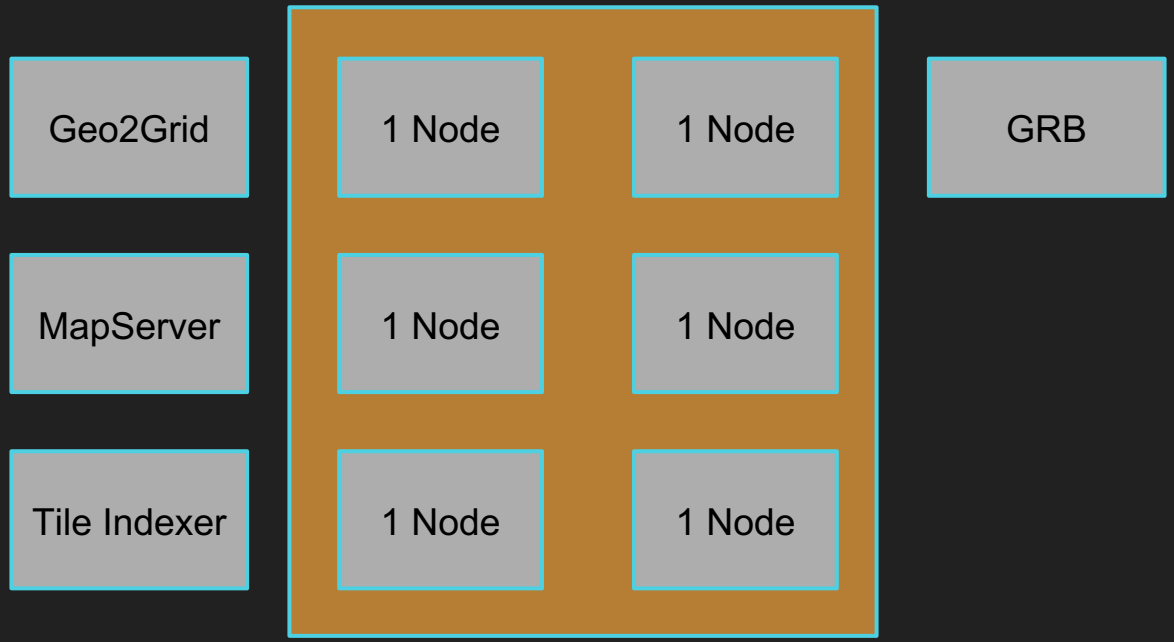


Multi-node processing - CephFS S3



Multi-node processing - CephFS S3



Thanks

Beta testers

Tim Schmit, Jim Nelson,
Mat Gunshor, Scott Lindstrom,
Liam Gumley, Kathy Strabala,
Sam Batzli, Jerry Robaidek

GeoSphere: https://geosphere.ssec.wisc.edu/

CSPP Geo: https://cimss.ssec.wisc.edu/csppgeo/

Video on Youtube