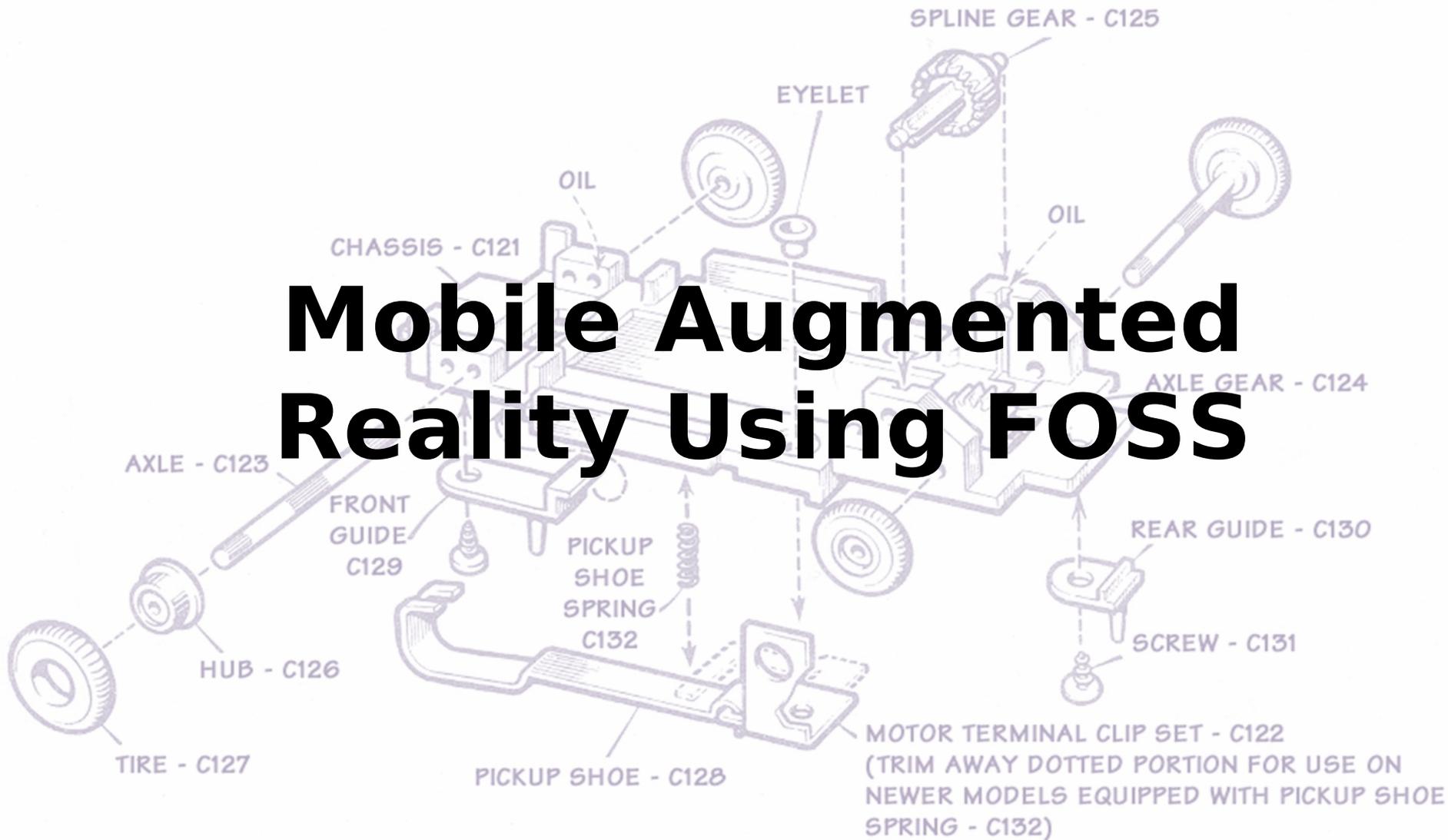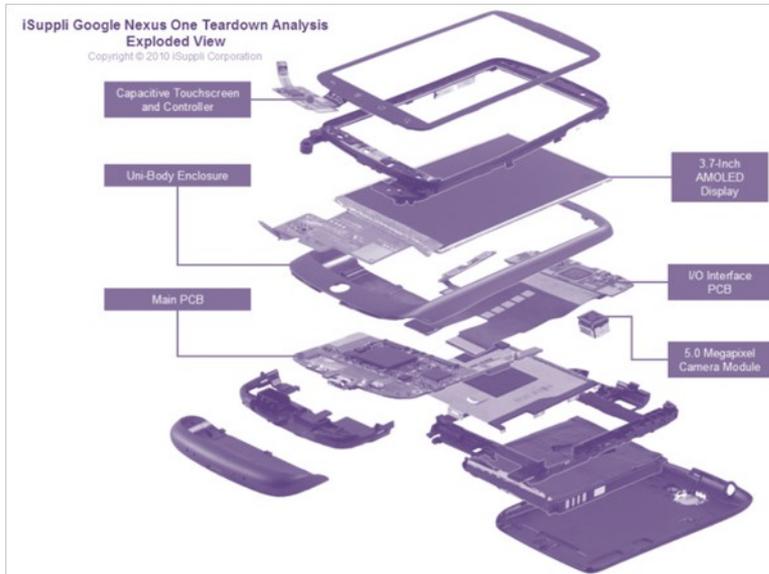# Mobile Augmented Reality Using FOSS

Open source AR in the wild

- Stats
  - Google Code: 104
  - SourceForge: 37
  - GitHub: ~75
- Mostly sketches, ARToolkit projects, libs and utilities
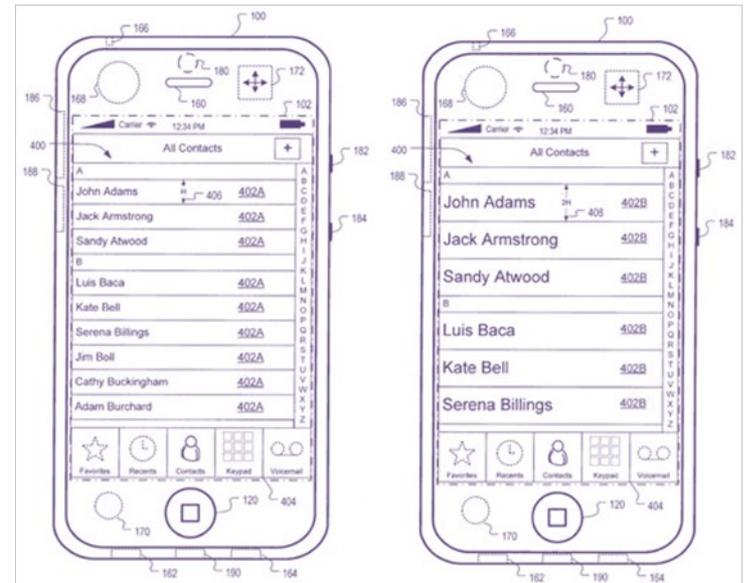- Not seeing many full clients

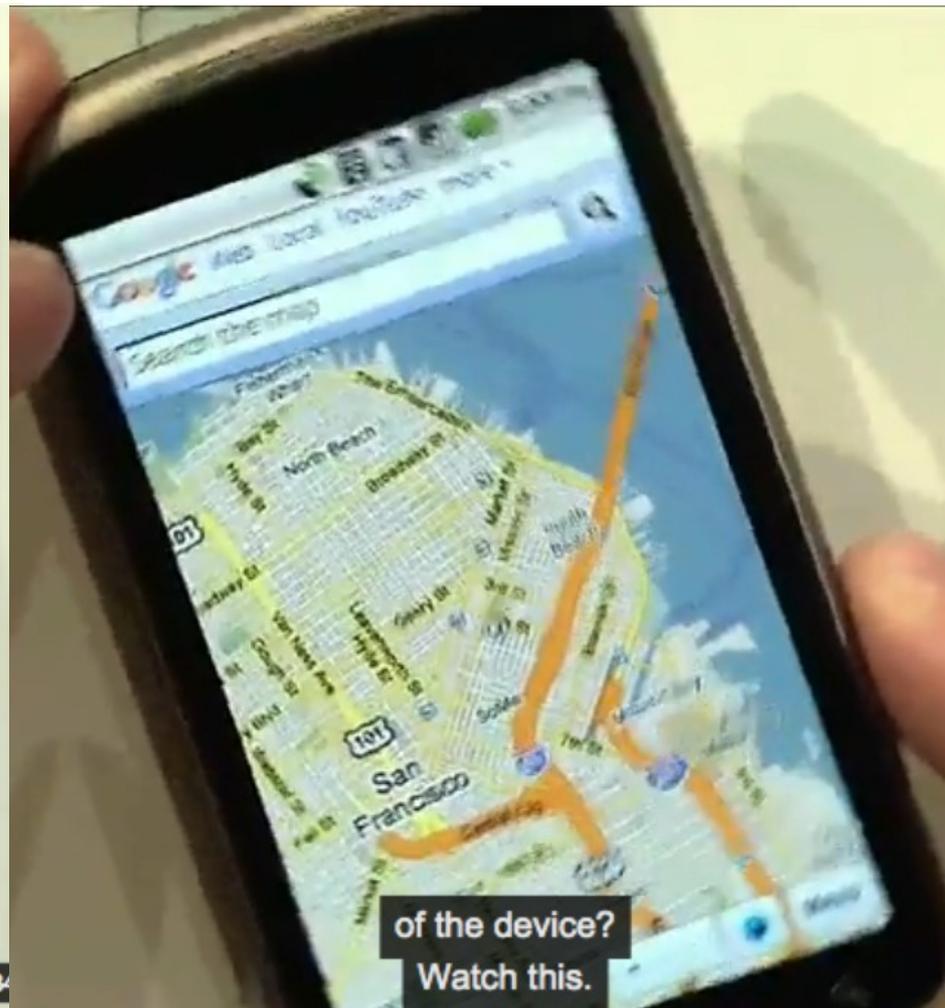# Mobile Augmented Reality (MAR) Platforms

Android

iOS

Current MAR Native Applications

MAR Web Applications

Kamra

https://research.cc.gatech.edu/polaris/
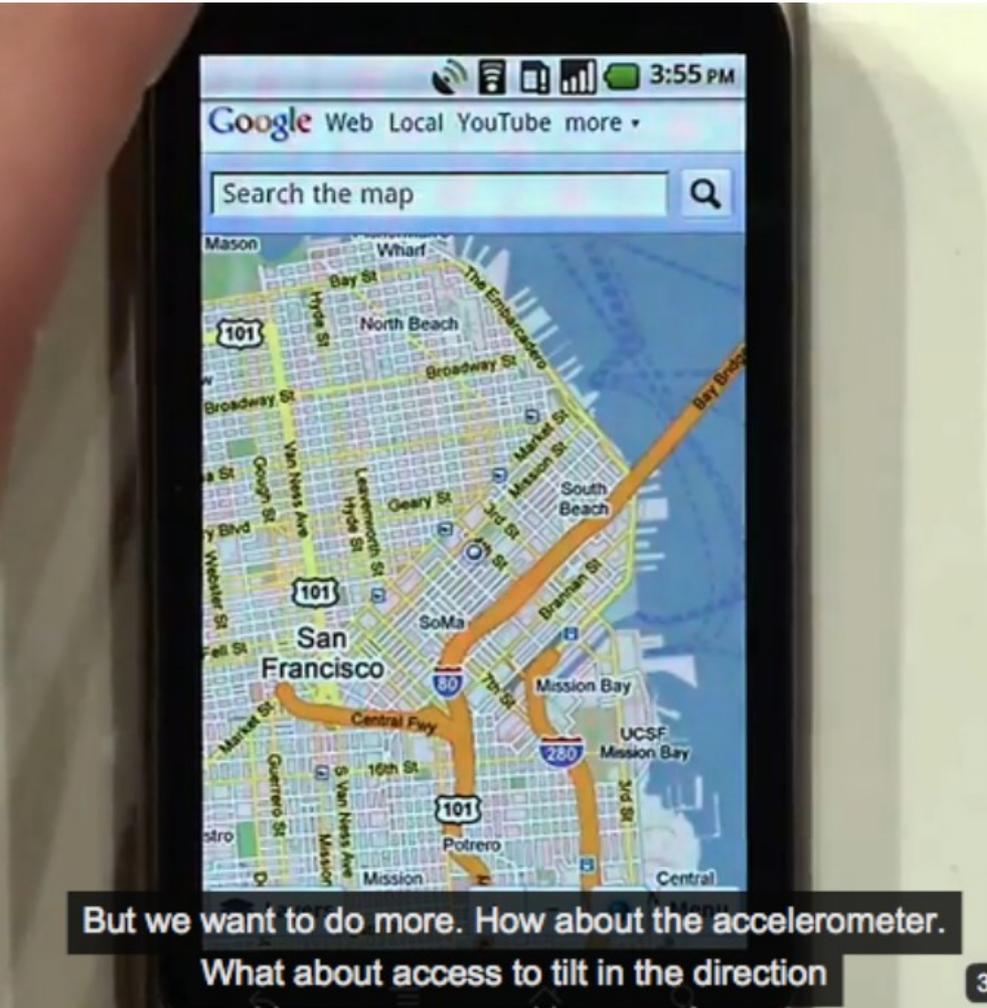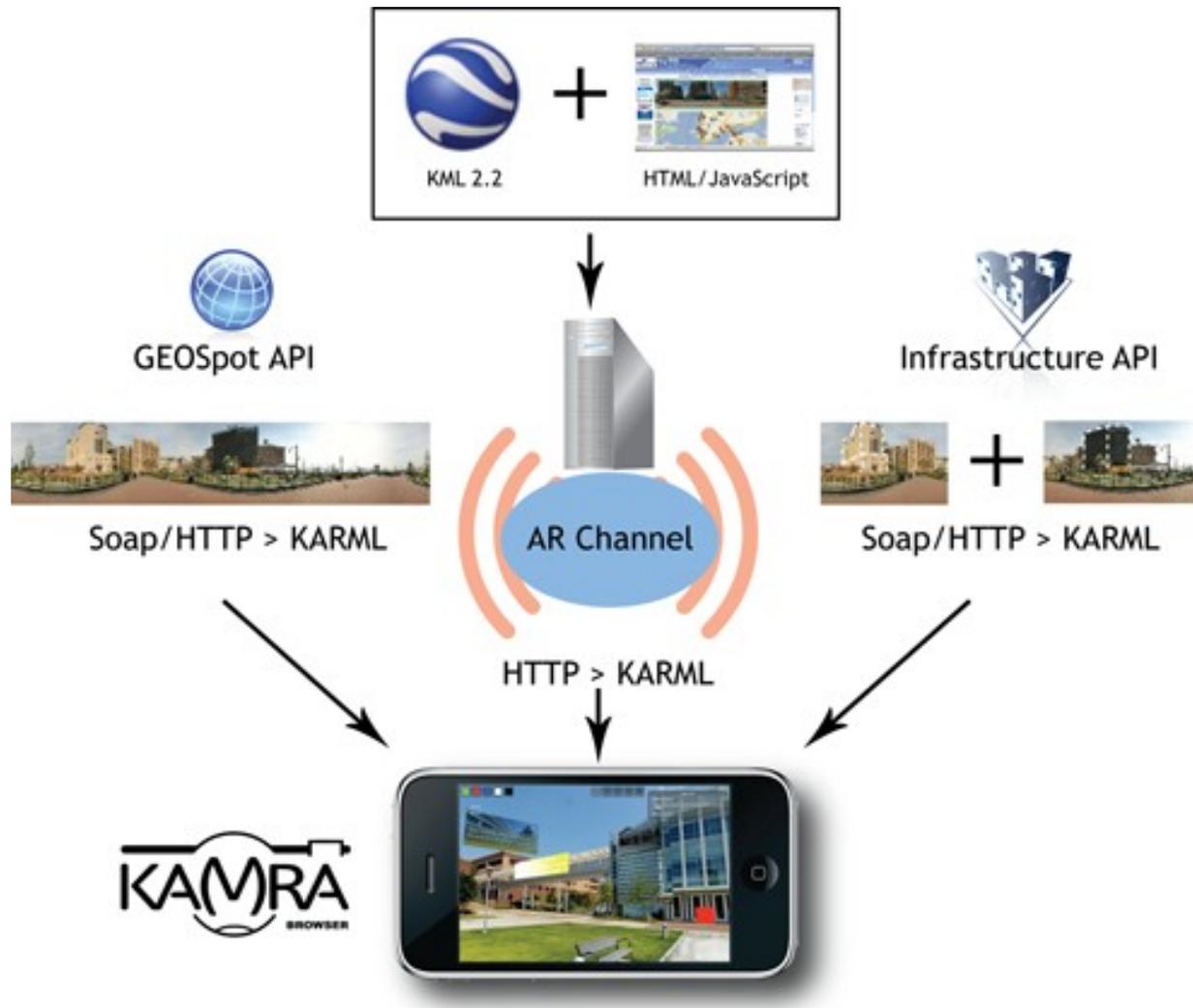
MAR Web Applications

Barriers to open source

- Walled gardens/silos of AR data
- Fragmentation
  - Android
    - 1.5, 1.6, 2.0, 2.1,2.2
    - apps vary across carriers
  - Apple
    - iPhone, iPod Touch, iPad
    - iPad video out, determined by application

Client choices

- Evaluated available clients
  - Proprietary: Wikitude, Layar and Junaio
  - Open Source: gamaray and Mixare
- Commonalities
  - XML/JSON formats
  - Points of Interest
- Mixare – Android/java, most mature/active OS MAR project

Choices of Geo Data Servers

- Driven by client requirements
  - Required formats mostly XML or JSON based
  - Only point format supported, think POI (Points of Interest)
- Chose GeoServer
  - Java
  - Familiarity
  - Work for OpenGeo

Geoserver

- Create data output used by Mixare

```
{"status": "OK",    "num_results": 1,
  "results": [
  { "id": "2827",
   "lat": "46.43893",
   "lng": "11.21706",
                    "elevation": "1737",
                    "title": "Penegal",
                    "distance": "9.756",
                    "has_detail_page": "1",
                    "webpage": "http%3A%2F%2Fwww.opengeo.org%2Fpic
        `     %2Fpicture.png"
  }
```

Geoserver

- Almost trivial with Geoserver-archetype-wfsoutputformat
  - Most of data contained in feature
  - Elevation from Geonames service
  - Added distance using a filter to modify response
 - JSON and GeoTools libs available and handy

Mixare

- Compilation
  - Failed on Android 1.6 (HTC Dream)
  - Worked on Android 2.1 (Droid, HTC EVO 4G)
  - Unstable on Android 2.2 – Cyanogen Mod 6.0 (HTC Dream)
- Works for the most part but user experience is not as rich as commercial clients.

Things I would do differently

- Correctly add vendor option, fix filter hack
- Create a WPS process to generate content
  - More flexible
  - Included in GeoServer 2.1 (just released)
- Stretch goal: add markerless tracking to Mixare using Kooaba or other image service

Final Thoughts

- Handset up display clients provide a terrible user experience
- At this time, MAR are mostly toys
- Activity towards an AR format and POI spec. is promising but slow.
- HTML5 client needed
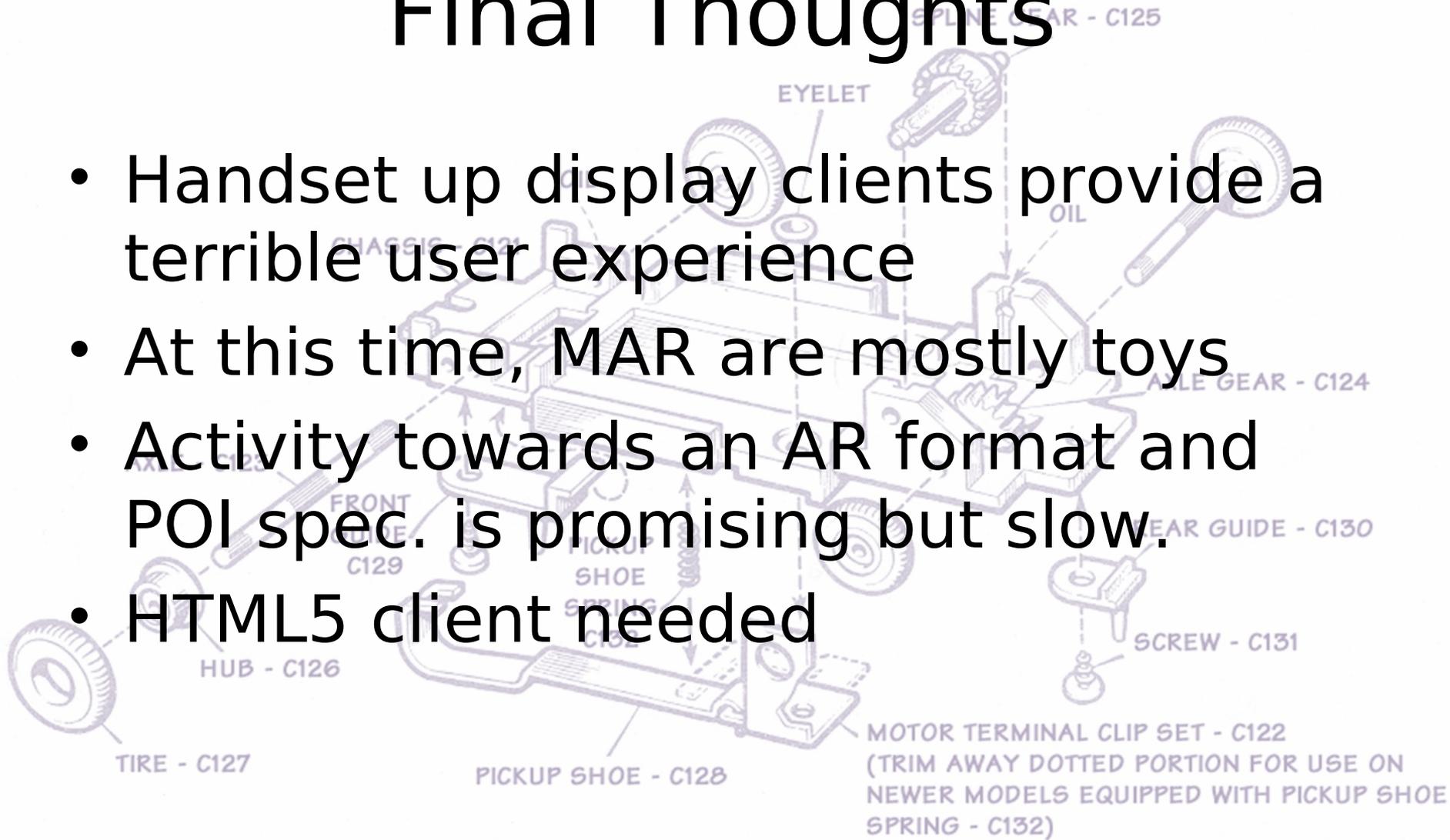
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