Video Geotagging
For Electronic Maps

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Overview

- **Geotagging Video Footage**
  - Current Technology Issues
  - Identified Business Needs
  - Solution Aims
- **Standard Video Map Track**
  - Web Map Interface
  - Web Video Interface
- **Use Case Examples**

Current Technology Issues

- **Video With Geolocation**
  - Inaccessible
    - No standard format
    - Embedded in MPEG encoding
  - Expensive
    - Add-on for high-end equipment
- **Photos With Geolocation**
  - Exif standard
  - Low-end smartphone feature

Identified Business Needs

- Dash & Body Cams

  - Police, rescue services

- Drones

  - Coastguard, mountain rescue, sport TV

- Helicopters

  - Police surveillance, aerial survey

- Satellites

  - Earth observation

Solution Aims

- ## Accessible

  - Based on Web Video Text Track (WebVTT)
    - Extension of video standards
    - Text based for easy editing
  - Open format with community support

- ## Intuitive

  - Presentation
  - Annotation
  - Animation

Solution Aims

- Flexible

  - Core features with extension framework

  - Cross-platform support

- Low Cost

  - Smartphone capture

  - Web browser display

Web Map Interface

- **Online Maps**
  - Mature APIs
    - Google Maps, Open Layers, Leaflet
  - Wide selection of map data
    - Global providers, e.g. NASA, ESA, Google
    - National agencies, e.g. Ordnance Survey
    - Online community, e.g. OpenStreetMaps
  - Animation
  - Graphical overlays
  - Manual override controls

Web Video Interface

- Online Video
  - HTML5
    - W3C Recommendation
    - Well-documented API
    - Mature, since October 2014
  - Synchronisation support
    - Events
  - Playback controls
    - Play, seek, pause

Use Case Examples

- Coastguard/Mountain Rescue

  - Drone search for a missing person

    - Rapid decision making
    - Effective resource deployment

- Area Survey

  - Drone survey of a given area

    - Autonomous quality assurance
    - Cost saving in reduced redeployment

Use Case Examples

- **Sports Trails**
  - Ski/cycle/parachute user with a helmet cam
    - Non-invasive capture
    - Information sharing
    - Speed & distance calculation
- **TV Coverage**
  - Drones & competitor cams filming an event
    - Multiple mobile video devices
    - Real-time asset management

Use Case Examples

- **Armchair Explorer**

  – Analyse footage of inaccessible location
    - Remote analysis of unsafe/historical place
    - Aggregate/share knowledge for archive footage

- **Treasure Hunt**

  – TV game show played over a wide area
    - Speed and distance calculation
    - Aggregate/share knowledge for real-time footage

Use Case Examples

- **Swarm Monitoring**
  - Operate a drone safely within a swarm
    - Static and dynamic hazard indication
    - Central swarm monitoring
    - Autonomous swarm monitoring

Summary

- **Video Map Track Standard**
  - Addresses identified needs
  - Innovative extension of existing technologies
  - Framework for product development
- **Web-Based Demo**
  - Low cost proof of concept
  - Engages online community
- **Identified Use Cases**