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BAM !

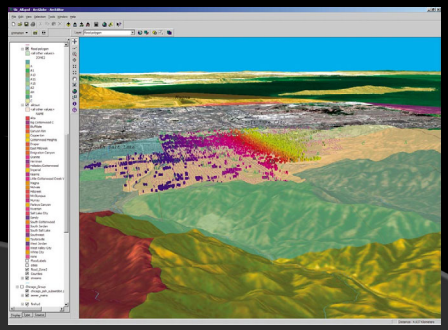
Instant Reality inside ArcGIS®

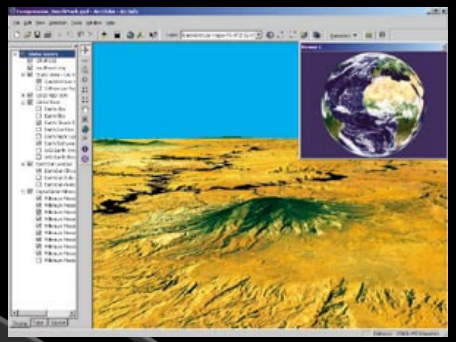
Instant Reality

Taking Vector Cartography/GIS to Raster Visualizations and Real Inputs

- **New ESRI Tools get REAL in 9.0**
- **Traditional and New Sources for Imagery & Other Geo-Data**
- **What it Means – Why it Matters**
- **Examples**

Instant Reality
Inside ArcGIS





- What's New
  - Tools: Arc9.0 – Improved Imagery Handling & ArcGlobe
  - Data: Cheap and Seamless High Res Imagery
    Efficient Linear Collects & Production
  - Access: Open Standards Based WMS/WFS Repositories & More Commercial ArcIMS Services, Arc Web Services
- What's the Same
  - Foundation Level Data Sets (but more consistent)
  - Enterprise GIS (but new tools & topology part of geodatabase)
  - Industry Specific Suppliers (but more choices, better data)

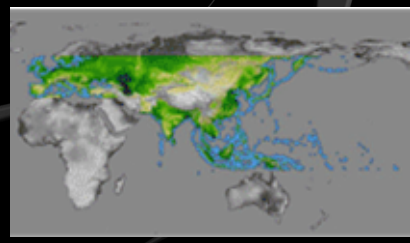
Instant Imagery

Traditional Sources:

- USGS – Landsat and DOQQ's, Terraserver
- Satellite data – NASA, International & High Res
  - space imaging – deeper archive
  - digital globe – lower prices
  - Orbital Sciences (NEW! Just up and calibrating now)
- Engineering/Survey Firms
  - Now Using Digital Sensors for elevation and efficient linear collections

What's New:

- **Seamless, "Off the Shelf " Datasets**
  - eDOQQ – 266,000 images into One Manageable Image
  - EarthSat – 8500 Landsat 7 scenes combined to one Seamless Global Image.
  - Depth of High-Res Sat Providers International Archive – More Imagery to choose from.
- **New Elevation Datasets**
  - usa: NED (30 and 10m post, best available)
  - international: srtm - North and South America and Eurasia Released
  - coming: Intermap's NextMapUSA USA - 1m accurate



- **New Access to Geo-Data**

  MetaData Efforts (geodata.gov) and Open Web Map Services(WMS & WFS)

Examples and Applications

Oxy Petroleum

Section lines and Source point Map

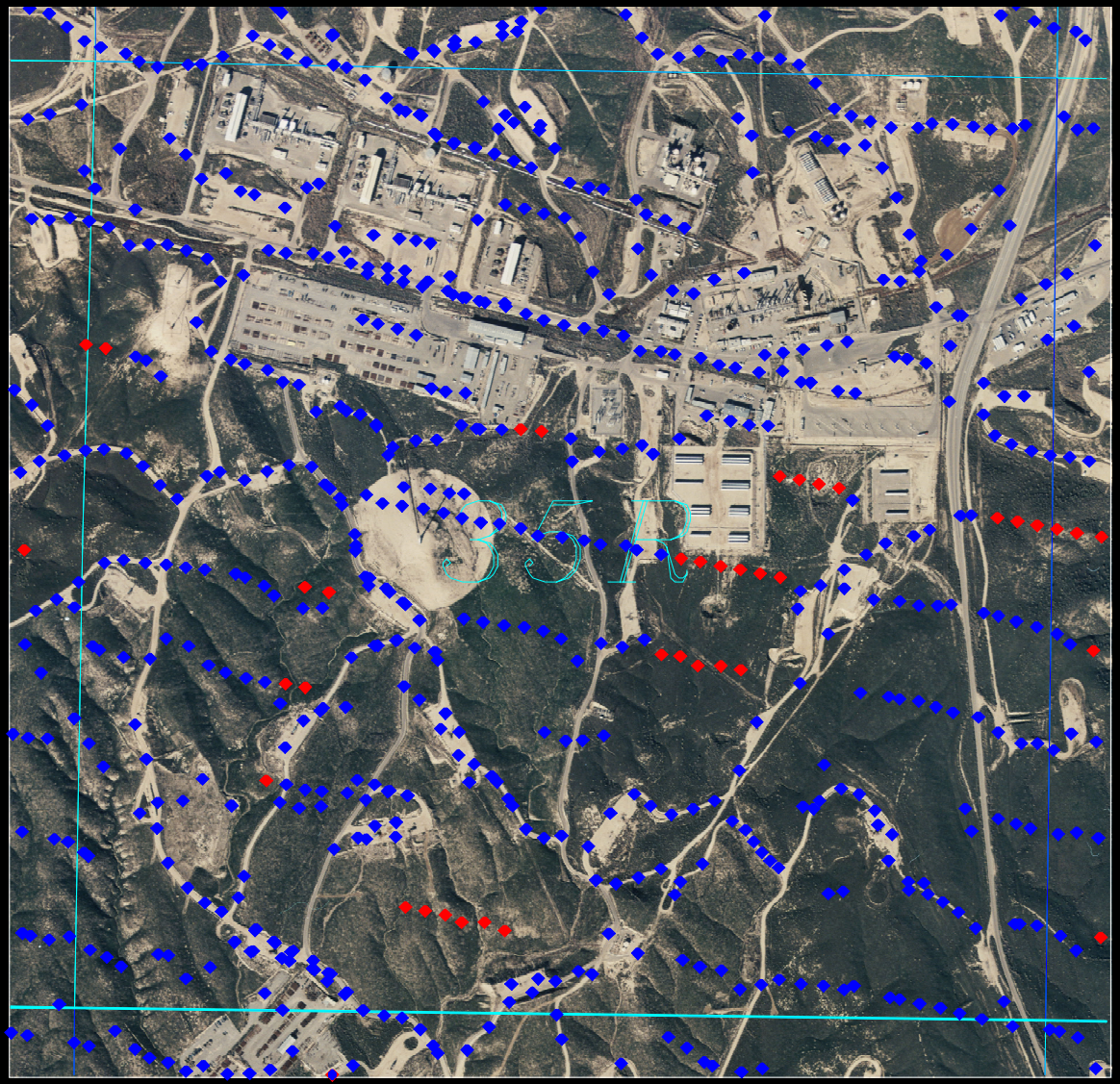
blue points are shots acquired with vibe trucks

red points acquired using dynamite shots.

blue points typically follow paths in which a vehicle, (i.e. vibe truck), has access and the red typically in inaccessible areas.

Without Photo Base Map, Interpretability is Tough.

Photo was also used to show how closely oxy was able to acquire data to sensitive areas without disturbance.



Examples and Applications

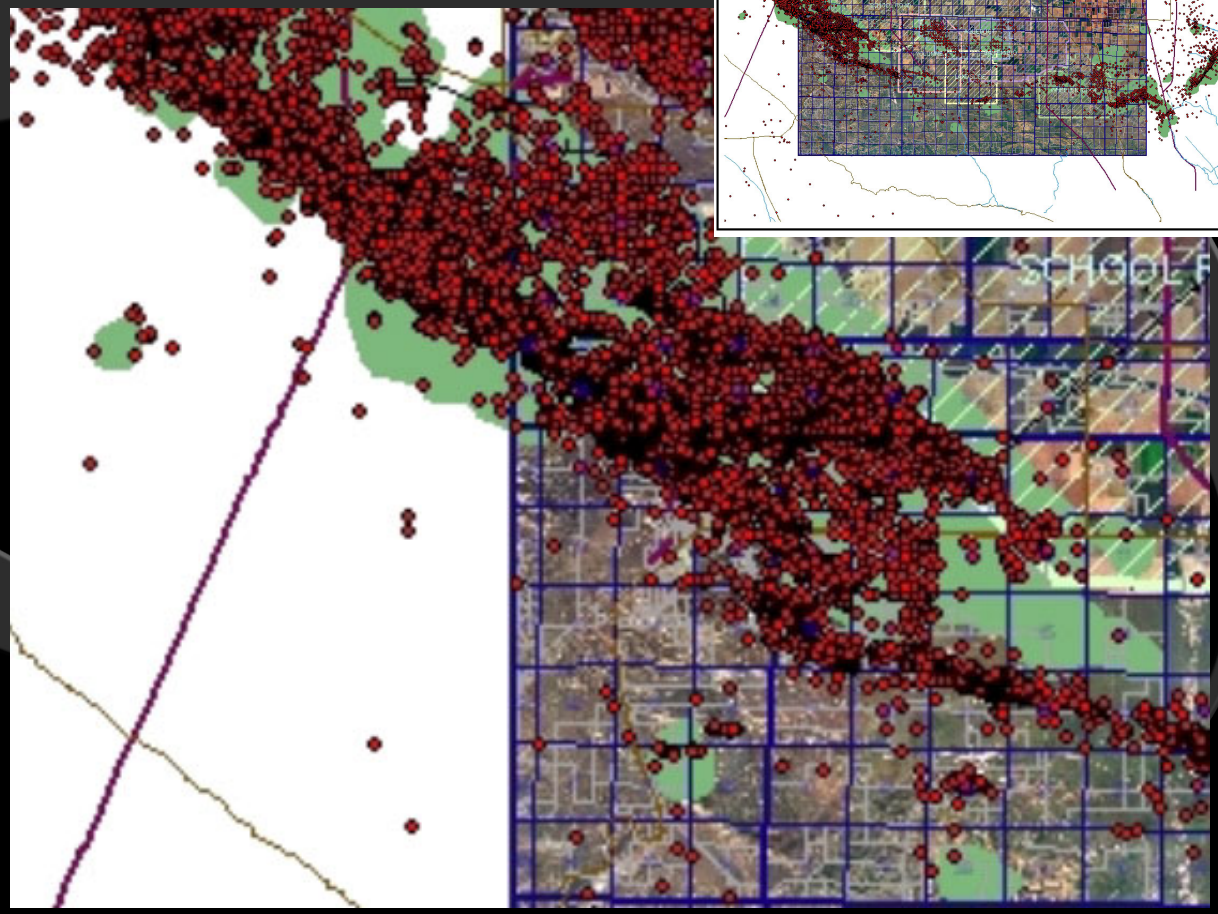
Oxy Petroleum

Photo Base Map for Cultural Layer Reference

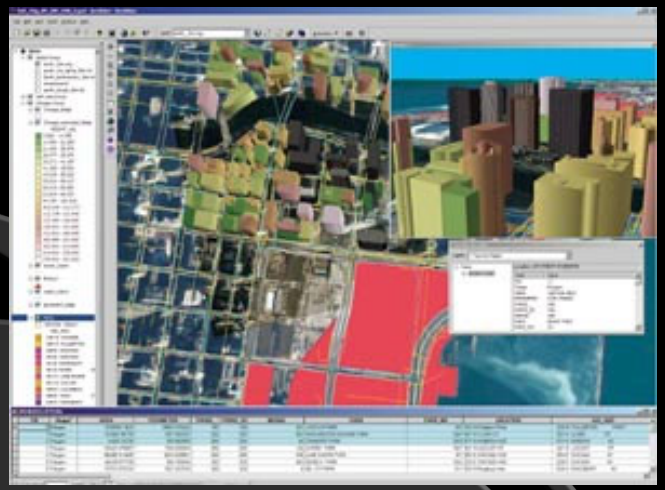
Layers Sourced from BLM, WhiteStar, and Oxy.

Includes 3D Survey Outlines, roads, wells, fields, and other misc. features

No Image = No Ground Truth



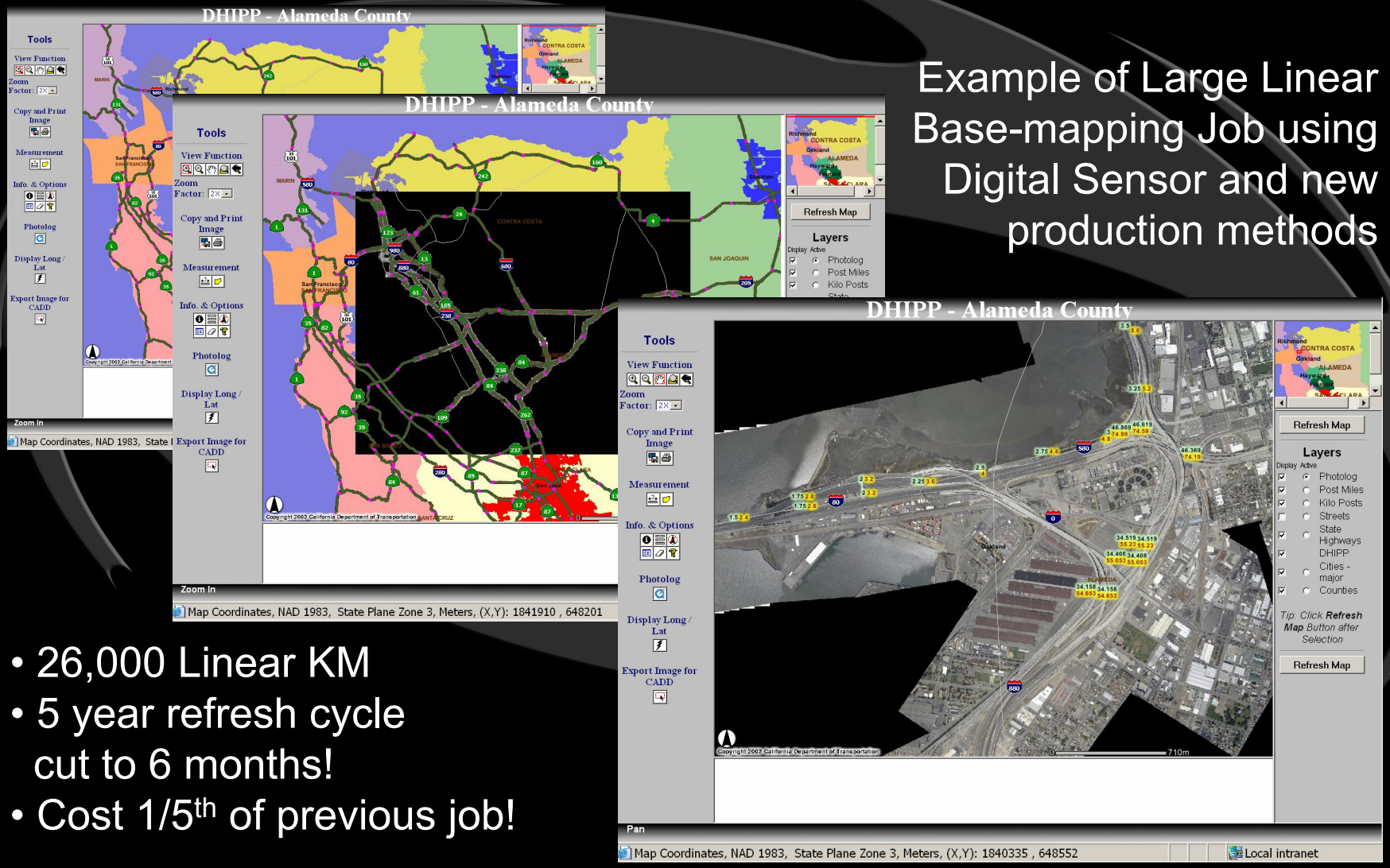
Instant Reality
What It Means



- Transformation in GIS
  - Realistic Environments
- Cheap & Available Basemaps
  - Allows for Systematic Feature Collection, Correction and Tighter Layer Co-Registration
- Mapping & GIS that Anyone Can Understand.
  - Faster Decisions, Executive Buy-In, Increased System Utility & Reach

More Examples and Applications

CalTrans DHIPP – Total Inventory Program



Example of Large Linear Base-mapping Job using Digital Sensor and new production methods

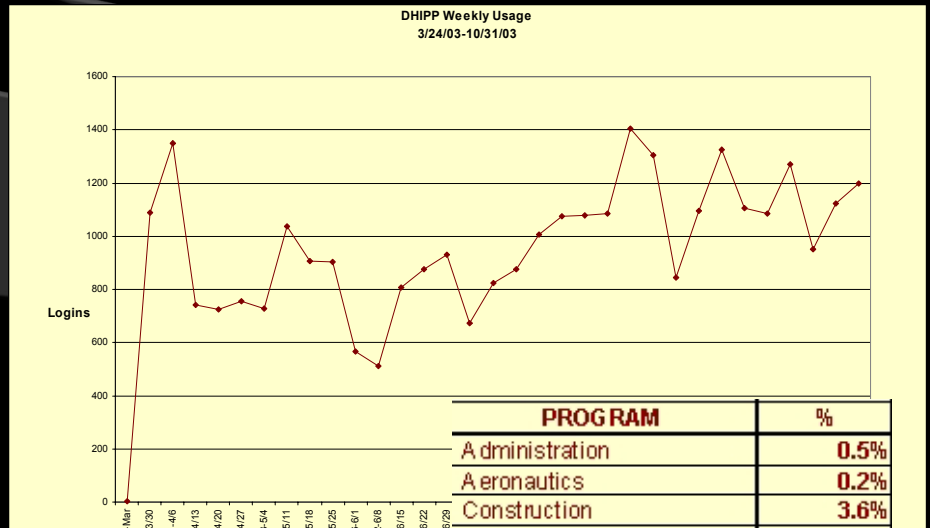
- 26,000 Linear KM
- 5 year refresh cycle cut to 6 months!
- Cost 1/5th of previous job!

Examples and Applications

DHIPP Use/Impact

Immediate Uptake and Strong Sustained Use

- Multi-Departmental Impact
- Went from a few hundred photo requests/uses a month to over 6000 images served/mo.
- Over 40,000 images served in 6mo
- Saved 4 million dollars and Shortened 5 year refresh cycle to 6mo!



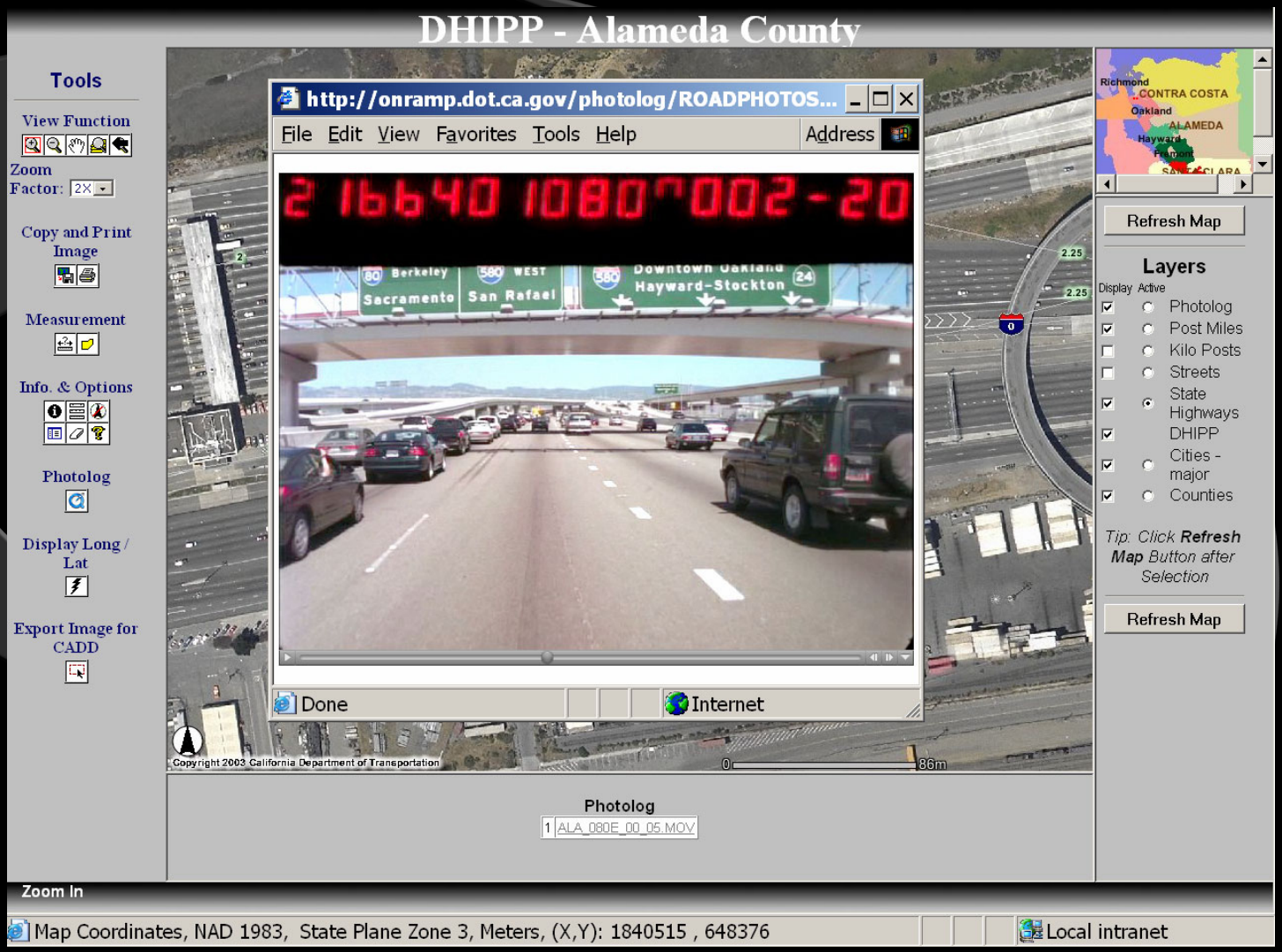
	DISTRICT	D1	D2	D3	D4	D5	D6	D7	D8
PROGRAM	%	2.5%	5.1%	12.4%	10.8%	4.8%	19.6%	6.5%	2.9%
Administration	0.5%	12	7	36	15	14	12	7	1
Aeronautics	0.2%	1	6	7	9	0	2	10	7
Construction	3.6%	37	30	92	223	43	178	165	134
Design	28.6%	190	210	1255	1280	584	2491	758	264
Engineering Services	15.0%	51	166	326	170	234	175	133	128
Environmental Analysis	9.4%	79	290	353	162	191	1016	80	141
Equipment	0.1%	5	0	6	6	3	2	5	1
External Affairs	0.1%	0	0	2	3	1	0	11	1
Finance	0.1%	0	0	2	1	0	0	1	0
Hq. Information Tech	1.3%	6	0	6	0	3	0	3	0
Legal	0.6%	7	19	26	3	2	2	4	4
Local Assistance	0.5%	14	15	10	55	4	0	8	5
Maintenance	6.1%	49	267	176	156	113	305	163	22
Mass Transportation	0.2%	2	2	13	9	3	2	4	2
New Tech & Research	0.6%	5	1	5	8	13	6	7	0
Other	1.5%	19	137	15	57	7	34	15	42
Project Management	2.1%	26	10	60	72	42	161	51	12
Rail	0.2%	2	1	9	6	0	1	3	1
Right-of-Way	5.4%	46	91	226	504	33	365	104	74
Traffic Operations	17.0%	117	153	1014	415	195	1089	290	25
Transportation Planning	5.7%	95	195	207	206	26	280	211	42
Trans. Sys Inform.	1.3%	1	1	14	21	0	4	3	4
TOTAL	100.0%	764	1601	3860	3381	1511	6125	2036	910

PROGRAM	%
Administration	0.5%
Aeronautics	0.2%
Construction	3.6%
Design	28.6%
Engineering Services	15.0%
Environmental Analysis	9.4%
Equipment	0.1%
External Affairs	0.1%
Finance	0.1%
Hq. Information Tech	1.3%
Legal	0.6%
Local Assistance	0.5%
Maintenance	6.1%
Mass Transportation	0.2%
New Tech & Research	0.6%
Other	1.5%
Project Management	2.1%
Rail	0.2%
Right-of-Way	5.4%
Traffic Operations	17.0%
Transportation Planning	5.7%
Trans. Sys Inform.	1.3%
TOTAL	100.0%

Examples and Applications

DHIPP

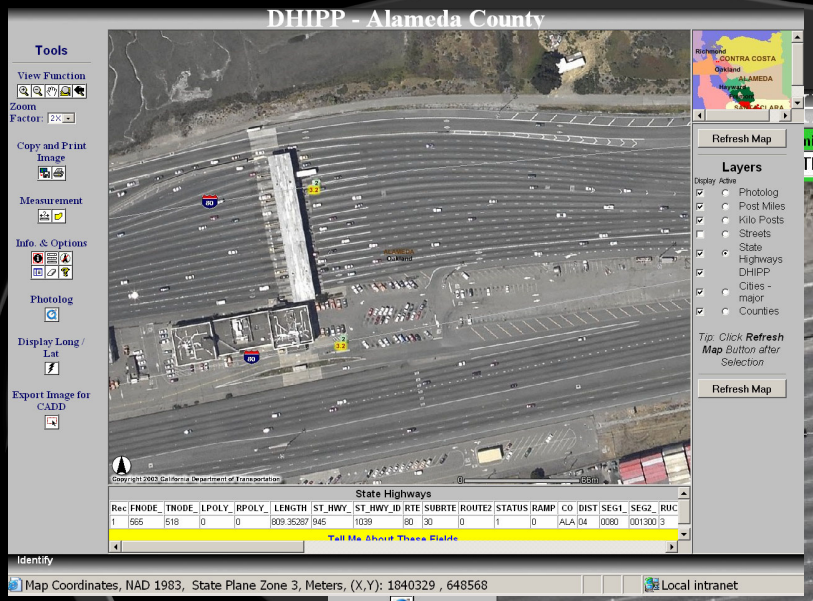
Ability to Automatically and Elegantly GeoReference and Access Full Motion Video, Stills and Other MultiMedia Data

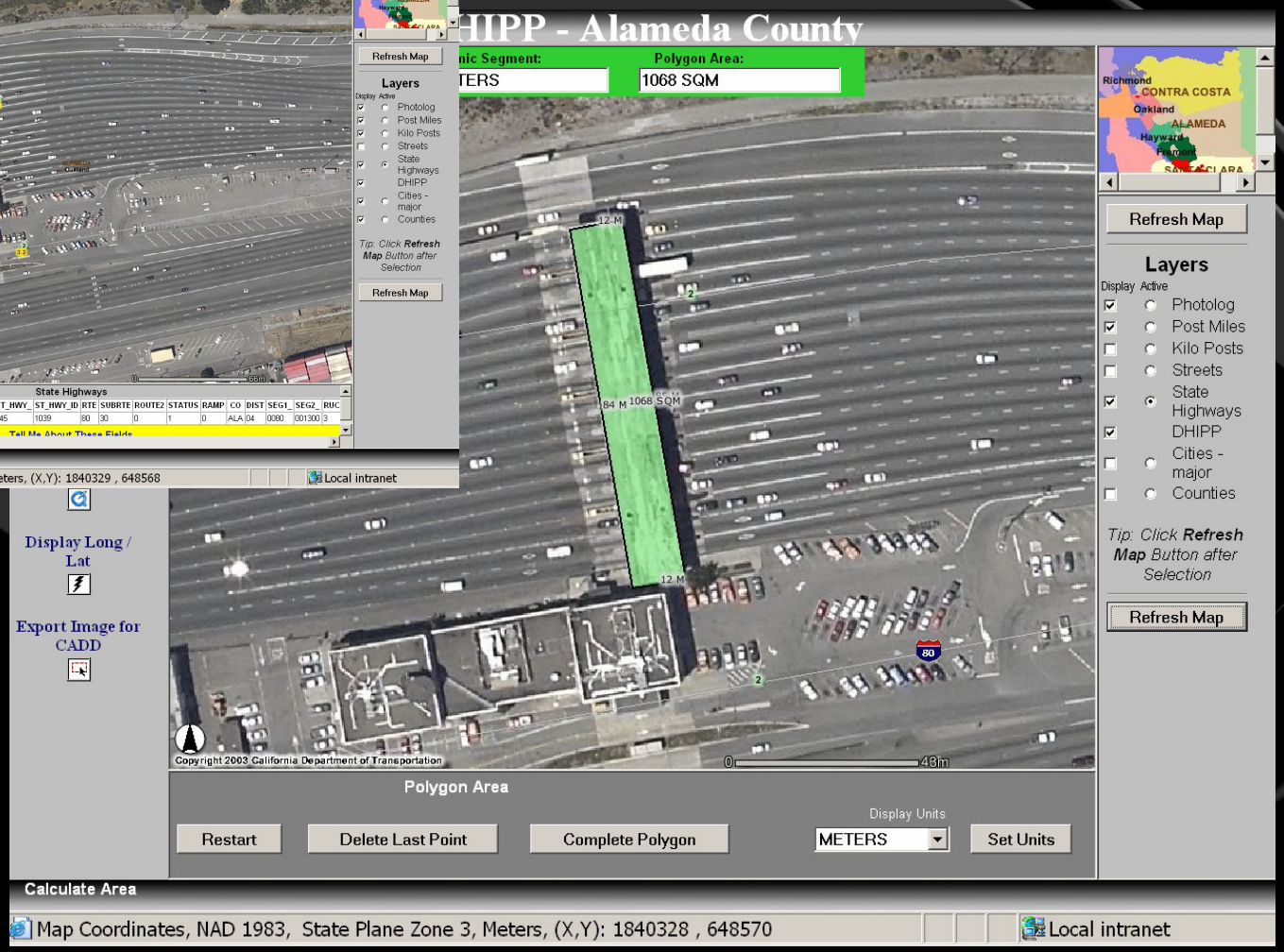


Examples and Applications

DHIPP

Online-Intranet Deployment





Thanks!

PUG Fun Fact

The Story of Pompey
The most famous pug in history
- Owned by William the Silent, 1571

"Pompey awakened his master during a surprise Spanish attack by scratching, crying, and leaping on his face, saving the Dutch camp, and forever altering the history of Europe."

Moral of the Story: Learn from the PUG - when scratching & crying for more GIS Resources doesn't work, don't be afraid to get in someone's face to get your department what it needs to save the day.