

V Konferencja naukowo-techniczna
ZASTOSOWANIA TECHNIK
OBSERWACJI ZIEMI
X Konferencja użytkowników
oprogramowania ERDAS Inc.



Applied ERDAS Solutions

Examples of different vertical market segments

Irmi Runkel, GEOSYSTEMS GmbH
i.runkel@geosystems.de



GEOSYSTEMS GmbH | Riesstraße 10 | 82110 Germering | T: 089 89 43 43 0 | F: 089 89 43 43 99 | geosystems@geosystems.de | www.geosystems.de



Applied ERDAS Solutions

- **Workflow streamlining**
of a state survey service
- **Heterogeneous data and applications**
in forestry
- **Fast data access**
of historical aerial data archive



Workflow streamlining of a state survey service

Customer: Ministry of Internal Affairs, State of Mecklenburg-Vorpommern

- Governmental service provider of geodata for the state of Mecklenburg-Vorpommern
- Responsible for country-wide flight campaigns, orthophoto production and data management
- Deliver ortho images on demand for public administration (e.g. forestry, agriculture, demography, land use planning)
- Concept and realization of a geodata web portal (initial phase)



Image-on-demand service

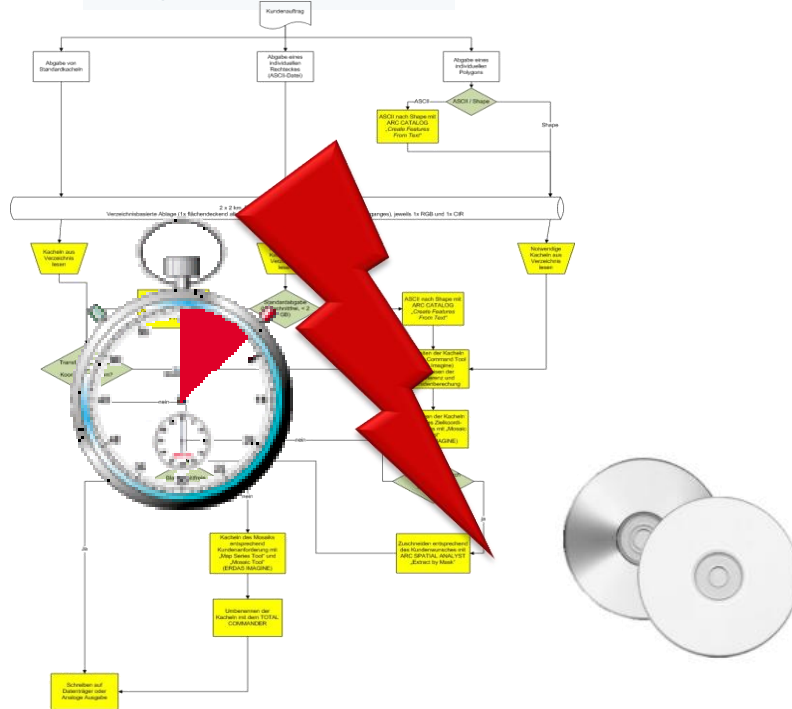
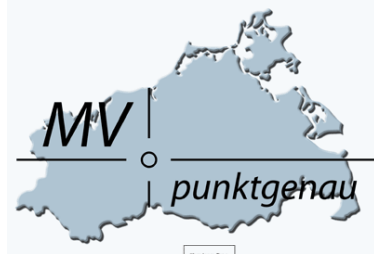
- Output media: Plot ↔ File
- Year: recent ↔ as specified
- Resolution: Default (0,2 m) ↔ on demand
- Band selection: PAN ↔ RGB ↔ CIR ↔ RGBI
- Projection system: ETRS89-UTM33 ↔ S42/83 ↔ RD83
- Format: TIFF ↔ ECW ↔ JPEG2000
- Output type: tiles ↔ administrative boundary, tiled
↔ administrative boundary, mosaic

The clients problem

- time delay between order and delivery
- Maintenance of different software packages
- Interface deficiency between software packages
- Knowledge of various software packages
- Shortage of experienced employees



The workflow



The bottle neck

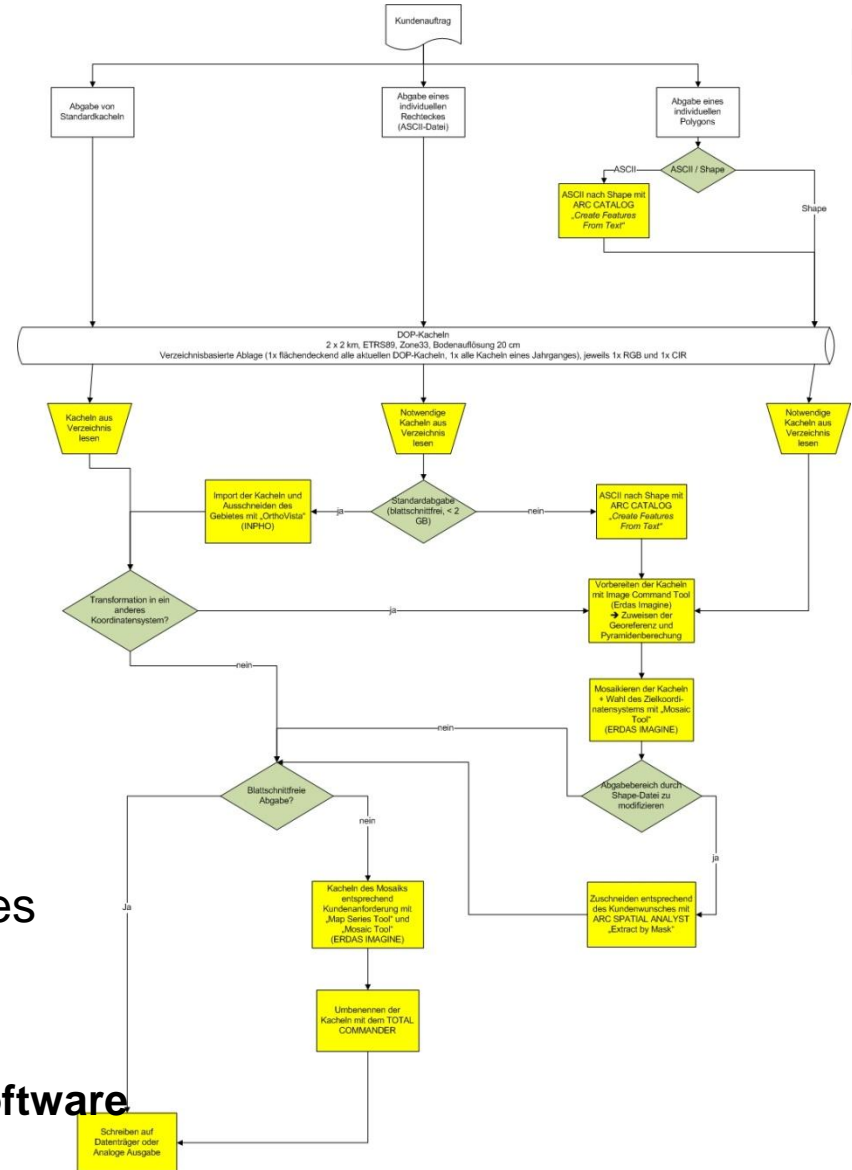
- Too many steps
- Too many programs
 - Arc Catalog (ESRI)
 - Arc Spatial Analyst (ESRI)
 - ERDAS IMAGINE
 - OrthoVista (Inpho)
 - Total Commander
 - ERMapper
- Too many handovers

The problem

- No automatized workflow
- No trained staff for all software packages

The need

→ user friendly batch programm with one software



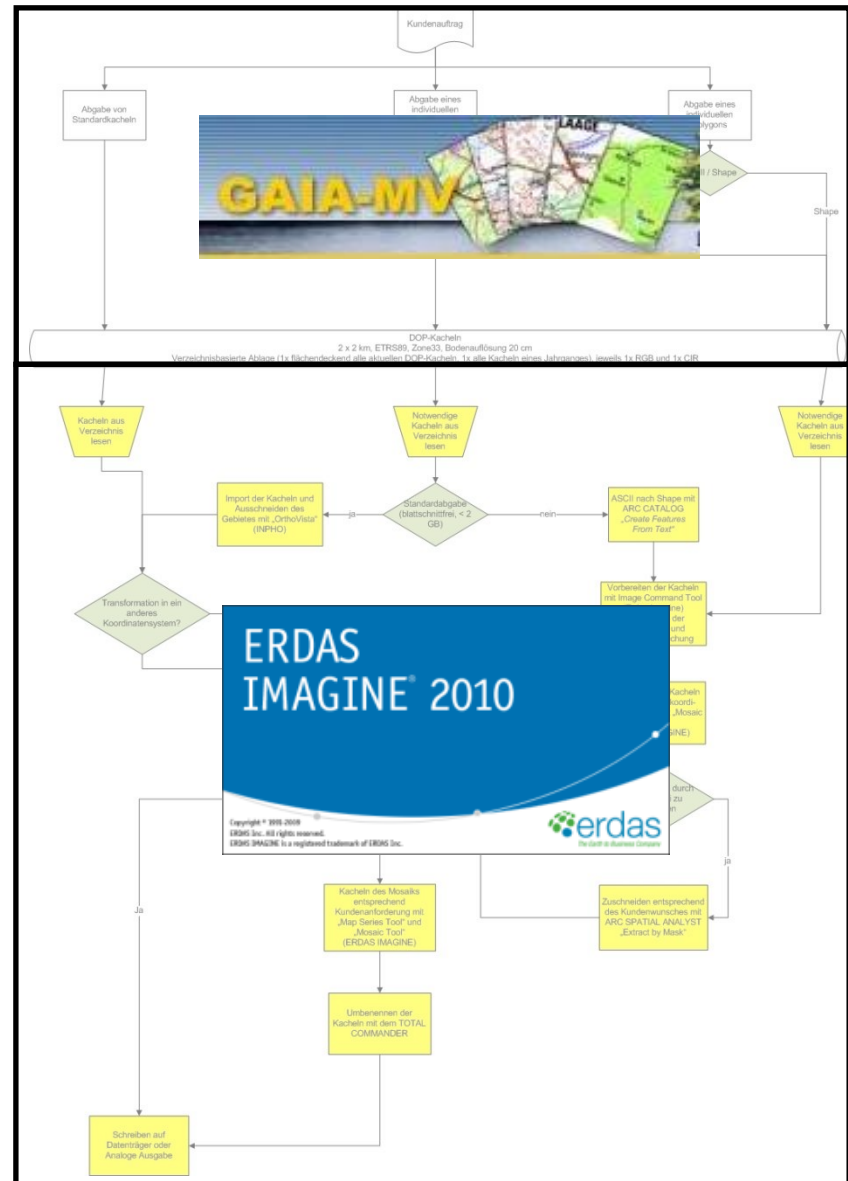
Workflow consulting and optimization

- Modification of the internal geodata portal

Now: all input parameter in XML

- Programming of all user-specific processing steps in one software package

ERDAS IMAGINE



The workflow now



Band



County



Projection



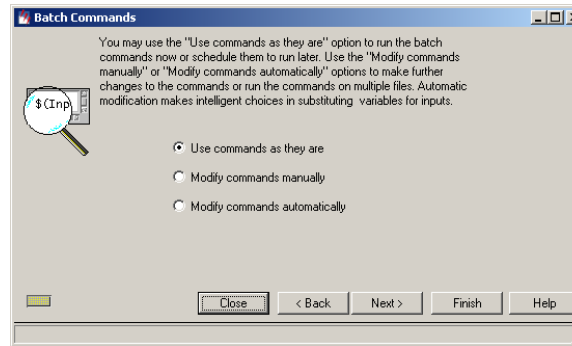
Tiles



Format

The screenshot shows the GAIA-MV web application interface. At the top, there is a header with the logo 'GAIA-MV' and 'Mecklenburg Vorpommern' with the slogan 'MV tut gut.'. Below the header, there is a navigation bar with tabs for 'Referenzkarte', 'Navigation', 'Abfrage', 'Messen', 'Zeichnen', and 'Einstellungen'. The main map area displays a topographic map of Mecklenburg-Vorpommern with a red outline around a specific region. The map includes labels for various districts such as Stralsund, Rostock, Greifswald, Wismar, Schwerin, Neubrandenburg, Nordvorpommern, Ostvorpommern, Nordwestmecklenburg, Oststrow, Demmin, Schwerin, Parchim, Neubrandenburg, Müritztal, Mecklenburg-Strelitz, and Uckermark. The map also shows a coordinate grid with latitude and longitude values. In the bottom right corner, a text box provides the coordinate system: 'Koordinaten: ETRS89_UTM(6 Grad), Zone 33, mit führender Zonenzahl 33357778.7 6075743.3'. On the left side, there is a search panel with a dropdown menu for 'Ämter' and 'Kreise', a search button, and input fields for coordinates (Nord: 6071760, West: 33204298, Ost: 33471955, Süd: 5888079).

The workflow now



- VMC
- reproject
- subset
- resample
- mosaic
- Spatial model



Benefit for the client

- Simplicity of the workflow
- Easy to maintain
- Faster delivery
- One point of contact = GEOSYSTEMS
- Future oriented workflow = web services (INSPIRE)





Heterogeneous raster data in forestry

Automized preparation and distribution

Customer: State Forest Department of Saxony

STAATSBETRIEB
SACHSENFORST



Freistaat
SACHSEN

■ Function

- State authority for forestry and wild life management
- Administration for Nature conservation

■ Responsibilities

- Forest management
- Services
- Administrative tasks



Project target: Maintain and distribute easily heterogeneous data for heterogeneous applications



- Different Sensors
- Different flight campaigns
- Frequently modified
- Historical data (static)
- New data
- Different band combinations

Heterogeneous data

Metadaten /
INSPIRE

Data administrator
Expert



- Automated
- Modern
- Future-oriented
- Understandable

- Different applications
- Different software packages
- Different data transmission
- Different user access and rights

Heterogeneous applications

Situation – heterogeneous raster data

Digital orthophotos

Aerial image bands: Pan, RGB, CIR
Sensors: Analogue, digital
Acquisition dates: 1996 – 2010
Area coverage: various
Resolution: 20 cm, 40 cm, ...
ImageFormats: TIF, GEOTIF, MrSID, ...

Satellite data

Sensors: Landsat, SPOT; IRS;
IKONOS
Acquisition dates
Area coverage: project related

Historical images

Georeferenced aerial images of the state
archive (approximately 1950 – 1955)

Raster maps

Different projections
Different qualities: colour maps, b/w maps
Different topics: topography/forestry/inventory
Meta data

Situation – heterogeneous requirement

Redundant data storage

Time and labour consuming:
serve all internal/external users
Expensive/ IT: disk storage
Complex logistics: cartridges, disks, raid systems
Limited: difficult access to meta data
(Excel/Word), not standardized

Usage

Remote sensing analysis
Derivation of thematic maps
Presentation of time series
Forest inventory
Manual: data exchange between different systems

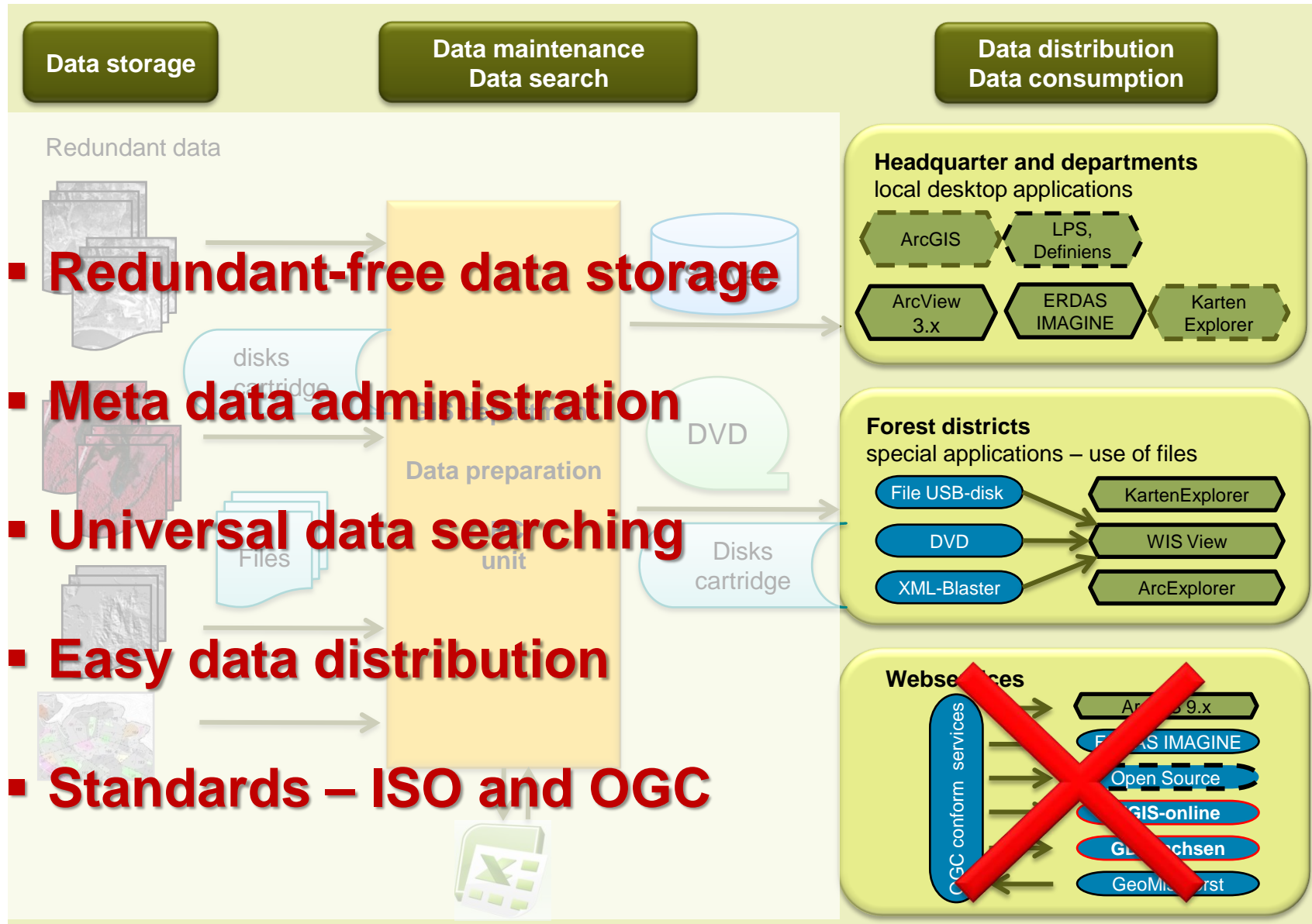
Archiving

Long-term archive
Data persistence

Distribution

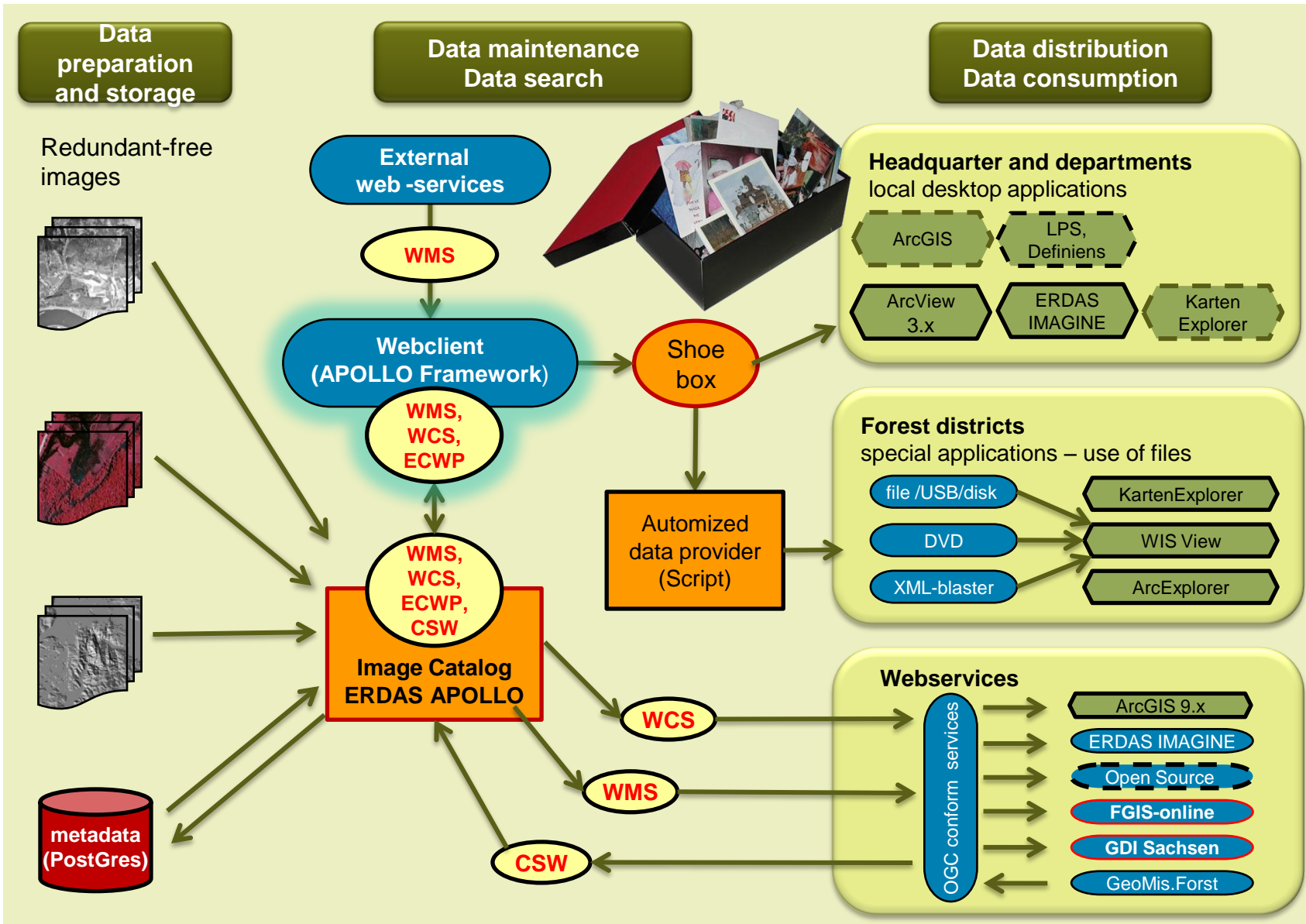
Special applications – file access
GDI – web services
Forest districts (DVD/CD, low band width)

Distribution/consumption of geodata at SBS - before



- **Redundant-free data storage**
- **Meta data administration**
- **Universal data searching**
- **Easy data distribution**
- **Standards – ISO and OGC**

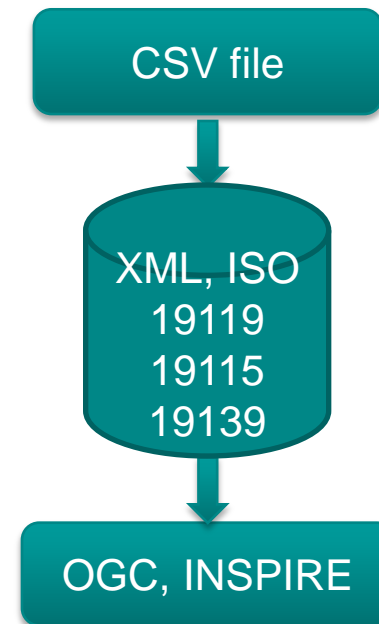
Sachsenforst – system overview



Data preparation

- Automated preparation of heterogeneous data files
 - Redundant-free base images
 - Unified projection
 - Lossless compression

- Automated standardization of heterogeneous meta data
 - Various input formats
 - Meta data in a data base (postgres)
 - Standardized meta data



Data crawling and cataloguing in ERDAS APOLLO

The screenshot illustrates the configuration of a crawler schedule in ERDAS APOLLO. The 'Crawler Schedule Wizard' is shown in its final 'Summary' step, with the following settings:

- Data Source Type:** File System Directory
- Parent Aggregate:** 2008_06_cir
- File System Directory:** \\Forst-as-2003\archiv05\2008\dop\tif_02\2008_06_cir
- Replicate Directory Hierarchy with Aggregates:** true
- Scheduling:** Run Immediately
- Processing and Web Options:**
 - Aggregate:
 - Generate Pyramids: true
 - Generate Thumbnails: true
 - WCS Enable: true
 - WMS Enable: true
 - Datasets:
 - Generate Footprints: Extent (fast)

The 'Jobs' window at the bottom of the interface shows the following data:

Name	Type	Status	Message	Last Run Start Date	Last Run End Date	Next Run Date	Interval	Parent Aggregate
2008_06_cir	File Sys...	RUNNING	add:4 skip:0 rej:0	Sep 1, 2009 09:50:01 A...			ONCE	2008_06_cir

Flexible data search within the web client

The screenshot displays the ERDAS APOLLO Web-Client interface in Mozilla Firefox. The browser address bar shows the URL `http://saruman:8080/apollo-client/index.jsp`. The application header includes the text "Forstliches Rasterdaten-Managementsystem" and "Willkommen admin Logout Deutsch".

The search panel on the left is titled "Suche" and contains the following fields and options:

- Type: Datensätze
- Stichworte: Wald
- Footprint: Rechteck, Erstellen
- Verfügbarkeit: Zur Kartenansicht hinzufügen (VMS) , Herunterladen (VCS) , Bildstream (ECVP)
- Datum: Registriert, 2008-03-10 00:00:00, 2010-03-11 00:00:00
- Aufnahmetyp: Digital
- Sensortyp: Luftbild
- Sensor: DMC
- Kanaele: BGRNir
- Bittiefe: 16 Bit
- TK-Blattnummer: (empty)
- Datenformat: tif

The map area shows a geographical view of Saxony, Germany, with various forest management units (FoB) and nature parks (AfG) labeled. The labels include: FoB Taura, AfG, NSG Königsbr. Heide, AfG, NSG Gohrischheide, AfG, BR Oberl. Heide u. Teichlandschaft, FoB Leipzig, FoB Dresden, FoB Oberlausitz, AfG, NLP Sächsische Schweiz, FoB Chemnitz, FoB Bärenfels, FoB Neustadt, FoB Plauen, FoB Neudorf, FoB Eibenstock, FoB Adorf, and Praha. The map includes navigation tools such as zoom in (+), zoom out (-), and pan (arrow) buttons.

The results panel at the bottom contains the following buttons: "Alle auswählen", "Auswahl aufheben", "Shoobox speichern", and "Keine Ergebnisse ...".

Flexible data search within the web client

The screenshot displays the ERDAS APOLLO Web-Client interface within a Mozilla Firefox browser. The browser's address bar shows the URL `http://saruman:8080/apollo-client/index.jsp`. The application header includes the text "ERDAS APOLLO Web-Client" and "Forstliches Rasterdaten-Managementsystem". A status bar at the top right displays "Willkommen admin", a "Logout" button, and a language dropdown set to "Deutsch".

The main interface is divided into several sections:

- Suche (Search):** Located on the left, it features a search type dropdown set to "Datensätze & Aggregates", a search input field, and buttons for "Bearbeiten", "Löschen", and "Einpassen". It also includes options for "Verfügbarkeit" (availability) and "Datum" (date).
- Map:** The central area shows a map of Saxony, Germany, with various Forest Object (FoB) labels such as "FoB Taura", "FoB Leipzig", "FoB Dresden", "FoB Chemnitz", and "FoB Adorf". A red box highlights a specific area on the map.
- Map Controls:** A vertical zoom slider is located on the left side of the map, and a toolbar with navigation icons is at the bottom.
- Search Results:** At the bottom, a results panel shows two entries. The first entry, "5048sw", has a title "5048sw", a summary "Coverage", and keywords "Leipzig,Colditz,Test62". It also displays the acquisition date "2002-08-20 12:00:00 +02:00" and the SRS "EPSG:31468". A small thumbnail image is visible next to the entry.

Flexible data search within the web client

The screenshot displays the ERDAS APOLLO Web-Client interface in Mozilla Firefox. The browser address bar shows the URL `http://saruman:8080/apollo-client/index.jsp`. The application header includes the title "ERDAS APOLLO Web-Client" and a user login "Willkommen admin". The main interface is divided into a search panel on the left and a map on the right.

Suche (Search) Panel:

- Type: Datensätze & Aggregates
- Stichworte: (empty input field)
- Footprint: Buttons for Bearbeiten, Löschen, Einpassen
- Verfügbarkeit: Zur Kartenansicht hinzufügen (WMS), Herunterladen (WCS)
- Datum: Registriert (dropdown menu)
- Suche: (button)

Map: Shows a map of Saxony, Germany, with various regions labeled. A red box highlights the region "Afg, BR Oberl. Heide- u. Teichlandschaft". Other labeled regions include FoB Taura, FoB Leipzig, FoB Dresden, FoB Chemnitz, FoB Bärenfels, FoB Marienberg, FoB Plauen, FoB Eibenstein, FoB Adorf, and FoB Neustadt.

Search Results Panel:

Zusammenfassung Coverage

Keywords: Leipzig, Colditz, Test35

SRS: EPSG:31468

Ausdehnung: 4628536.7, 5653105.3, 4634524.7, 5658816.3

Buttons: Katalog-Metadaten, ISO-Metadaten, Hinzufügen, Herunterladen

4949nw

Titel: 4949nw

Zusammenfassung Coverage

Keywords: Leipzig, Colditz, Test33

SRS: EPSG:31468

Ausdehnung: 4628398.1, 5658665.8, 4634379.1, 5664376.8

Buttons: Katalog-Metadaten, ISO-Metadaten, Hinzufügen, Herunterladen

4948nw

Data control, data analysis with in the web client

The screenshot displays the ERDAS APOLLO Web-Client interface within a Mozilla Firefox browser. The browser's address bar shows the URL `http://saruman:8080/apollo-client/index.jsp`. The application title is "ERDAS APOLLO Web-Client".

The interface includes a menu bar with options: Datei, Bearbeiten, Ansicht, Chronik, Lesezeichen, Extras, Hilfe. Below the menu is a search bar and a "Shoebox speichern" button. The main area is a GIS map showing forest areas with various layers. The map is titled "Forstliches Rasterdaten-Managementsystem" and displays coordinates (X: 4.616.919,646; Y: 5.656.151,235) and a scale of 1:123.496. The map shows several forest areas, including Rev Meißen, Rev Letzdorf, Rev Tharandt, Rev Grillenburg, Rev Naundorf, Rev Altenberg, Rev Bärenfels, Rev Gohrisch, Rev Markersbach, and FoB Dresden. A legend on the left side lists various layers, including "4949nw", "4949sw", "4949sw", "5047no", "5047so", "5048no", "5048nw", "5048so", "5048sw", "Beschriftung Waldflaeche", "Beschriftung Forstbezirke", "Beschriftung Abteilungen", "Beschriftung Forstreviere", "Waldflaeche", "Abteilungen", "Reviere", "Forstbezirke", "cities", "admin98", and "entry98genoz".

Below the map, there are buttons for "Alle auswählen", "Auswahl aufheben", and "Shoebox speichern". A metadata table is displayed, showing details for two layers:

Layer ID	Titel	Zusammenfassung	Keywords	Zugriff	Acquisition Date	SRS	Ausdehnung
5048sw	5048sw	Coverage	Leipzig,Colditz,Test62	VMS WCS	2002-08-20 12:00:00 +02:00	EPSG:31468	4617104, 5641704.9, 4623092, 5647402.9
5048so	5048so			VMS WCS	2002-08-20 12:00:00 +02:00		

Buttons for "Katalog-Metadaten", "ISD-Metadaten", "Hinzufügen", and "Herunterladen" are also visible. The bottom status bar shows "Fertig".

Meta data – ISO Standard

The screenshot displays the ERDAS APOLLO Web-Client interface in Mozilla Firefox. The browser address bar shows the URL <http://saruman:8080/apollo-client/index.jsp>. The application title is "ERDAS APOLLO Web-Client".

The main interface includes a menu bar (Datei, Bearbeiten, Ansicht, Chronik, Lesezeichen, Extras, Hilfe), a search bar, and a sidebar with "Layerübersicht" (Layer Overview) and "Datenzusammenstellungen" (Data Compositions). The "Layerübersicht" shows various layers like "Beschriftung Forstreviere", "Beschriftung Forstbezirke", "Beschriftung Abteilungen", "Beschriftung Waldflaeche", "Waldflaeche", "Abteilungen", "Reviere", "Forstbezirke", "cities", "admin98", and "cntry98gen02".

The central map area shows a satellite-style map with various polygons and labels. A pop-up window titled "Informationen in ISO19139" is open, displaying metadata for a specific area (5048sw). The metadata includes:

- Language:** en
- Metadata Standard Name:** ISO19115
- Overview:**
- Contact Information:**
 - Role:**
 - Name:** Professional Services
 - Position:**
 - Organisation Name:** GEOSYSTEMS GmbH
 - Phone:**
 - Voice Telephone:** 089-894343-0
 - Facsimile Telephone:** 089-894343-99
 - Email: Extent:**
 - Geographic Element:**
 - Temporal Element:**
 - Temporal Extent:** 2002-07-29T12:00:00.00Z2002-08-20T12:00:00.00Z
- Reference System Information:**
 - Name:** 31468

Below the metadata, there are buttons for "Alle auswählen", "Auswahl aufheben", and "Shoebox speichern". A list of metadata entries is shown, with "5048sw" selected. The entry details include:

- Titel:** 5048sw
- Zusammenfassung:** Coverage
- Keywords:** Leipzig,Colditz_Test62
- Zugriff:** VMS WCS
- Acquisition Date:** 2002-08-20 12:00:00 +02:00
- SRS:** EPSG:31468
- Ausdehnung:** 4617104,5641704.9,4623092,5647402.9

Buttons for "Katalog-Metadaten", "ISO-Metadaten", "Hinzufügen", and "Herunterladen" are also visible. The bottom of the window shows "Fertig" (Finished).

Meta data – catalogue

The screenshot shows the ERDAS APOLLO Web-Client interface in Mozilla Firefox. The browser address bar shows the URL `http://saruman:8080/apollo-client/index.jsp`. The application title is "ERDAS APOLLO Web-Client". The main interface includes a navigation menu on the left with options like "Inhalte", "Daten", and "Suche". A central map displays a forest plot with various numbered plots (e.g., 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000). A "Katalog-Metadaten" window is open, displaying the following metadata for a dataset:

Property	Value
Name	5048sw
Title	5048sw
Owner	admin
Abstract	Coverage
Node Type	Dataset
Registration Date	2010-03-16 16:28:14 +01:00
File URI	\\Saruman\GIS\Daten_SMUL\testdaten\dop\2002\2002_05_cir\5048sw.tif
Metadata URI	
WCS enabled	yes
WMS enabled	yes
ECW/P enabled	no
Draw order	0
Null value	
Decoder name	TIF
Channel axis	Band
Channels	band1,band2,band3
Keywords/Tags	Leipzig,Colditz,Test62
Acquisition Date	2002-08-20 12:00:00 +02:00
Data is acquired	
Data is processed	
Metadata is acquired	

The main interface also shows a list of layers on the left, including "4949nw", "4949sw", "4949sw", "5047no", "5047so", "5048no", "5048nw", "5048so", "5048sw", "Abteilungen", "Reviere", "Forstbezirke", "cities", "admin98", and "entry98genoz". The bottom right of the interface shows a list of entries, with the first entry selected:

Check	ID	Title	Acquisition Date	Zugriff
<input checked="" type="checkbox"/>	5048sw	5048sw	2002-08-20 12:00:00 +02:00	WMS WCS
<input checked="" type="checkbox"/>	5048so	5048so	2002-08-20 12:00:00 +02:00	WMS WCS

High speed access to raster data – seamless zoom

The screenshot displays the ERDAS APOLLO Web-Client interface within a Mozilla Firefox browser. The browser's address bar shows the URL <http://saruman:8080/apollo-client/index.jsp>. The application header includes the text "ERDAS APOLLO Web-Client" and "Forstliches Rasterdaten-Managementsystem".

The main interface is divided into several sections:

- Navigation and Status:** At the top, there are navigation icons (back, forward, home, search) and a search bar. The status bar shows coordinates (X: 4.618.060,88; Y: 5.647.045,021), a scale of 27.856, and the SRS (EPSG:31468).
- Layer Management:** On the left, there is a "Layerübersicht" (Layer Overview) panel. It lists various layers such as "Beschriftung Forstreviere", "Beschriftung Forstbezirke", "Beschriftung Abteilungen", "Beschriftung Waldflaeche", and "Waldflaeche". Below this, a list of specific layers is shown with checkboxes and eye icons, including "4949nw", "4949sw", "4949sw", "5047no", "5047so", "5048no", "5048nw", "5048so", "5048sw", "Abteilungen", "Reviere", "Forstbezirke", "cities", "admin98", and "cntry98gen02".
- Map View:** The central area displays a raster map with various colored regions (red, green, grey) and numerous numerical labels (e.g., 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000). The map also shows labels for "Rev Karsdorf", "FoB Bärenfels", "Rev Altenberg", and "Rev Spechtshaus".
- Metadata and Selection:** Below the map, there are buttons for "Alle auswählen", "Auswahl aufheben", and "Shoobox speichern". A list of selected items is shown, including "5048sw" and "5048so". The metadata for "5048sw" is displayed, including "Titel: 5048sw", "Zusammenfassung: Coverage", "Keywords: Leipzig,Colditz_Test62", "Zugriff: VMS WCS", "Acquisition Date: 2002-08-20 12:00:00 +02:00", "SRS: EPSG:31468", and "Ausdehnung: 4617104,5641704.9,4623092,5647402.9". There are also buttons for "Katalog-Metadaten", "ISD-Metadaten", "Hinzufügen", and "Herunterladen".

Data distribution: XML-file list (direct file access)

The screenshot shows the ERDAS APOLLO Web-Client interface in Mozilla Firefox. The main map displays a forest plot with various numbered plots (e.g., 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000). The metadata list below the map shows two entries:

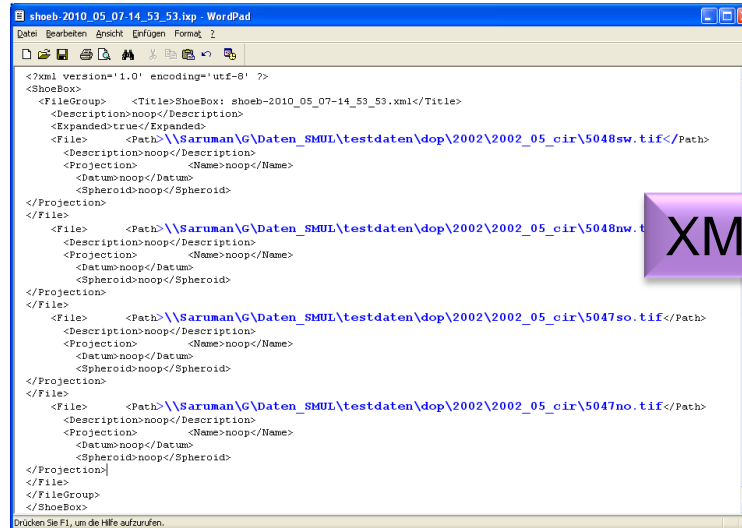
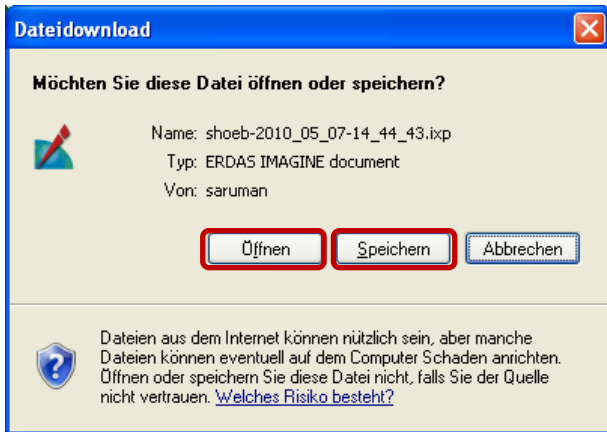
Selection	ID	Title	Keywords	Acquisition Date	Zugriff
<input checked="" type="checkbox"/>	5048sw	5048sw	Leipzig,Colditz,Test62	2002-08-20 12:00:00 +02:00	WMS WCS
<input checked="" type="checkbox"/>	5048so	5048so		2002-08-20 12:00:00 +02:00	WMS WCS

The dialog box titled "Öffnen von shoeb-2010_05_07-20_44_06.ixp" contains the following information:

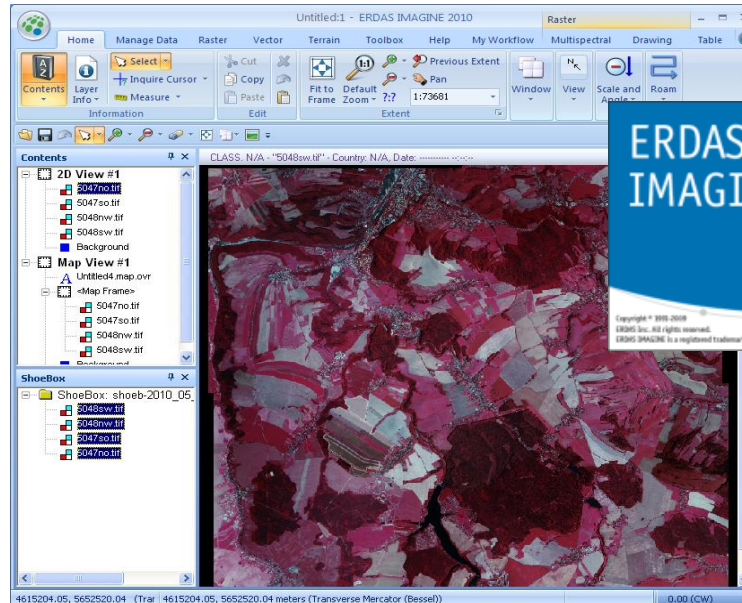
- Sie möchten folgende Datei herunterladen:
- shoeb-2010_05_07-20_44_06.ixp**
- Vom Typ: Firefox Document
- Von: http://saruman:8080
- Wie soll Firefox mit dieser Datei verfahren?
- Öffnen mit: FirefoxHTML (Standard)
- Datei speichern
- Für Dateien dieses Typs immer diese Aktion ausführen
- Buttons: OK, Abbrechen



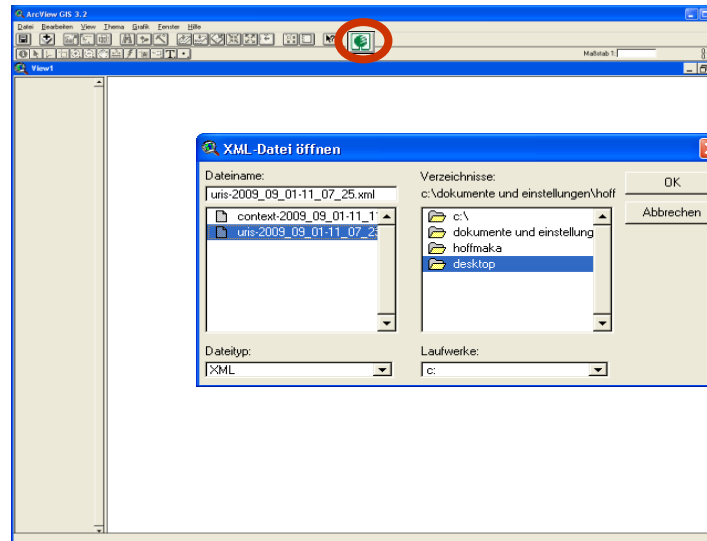
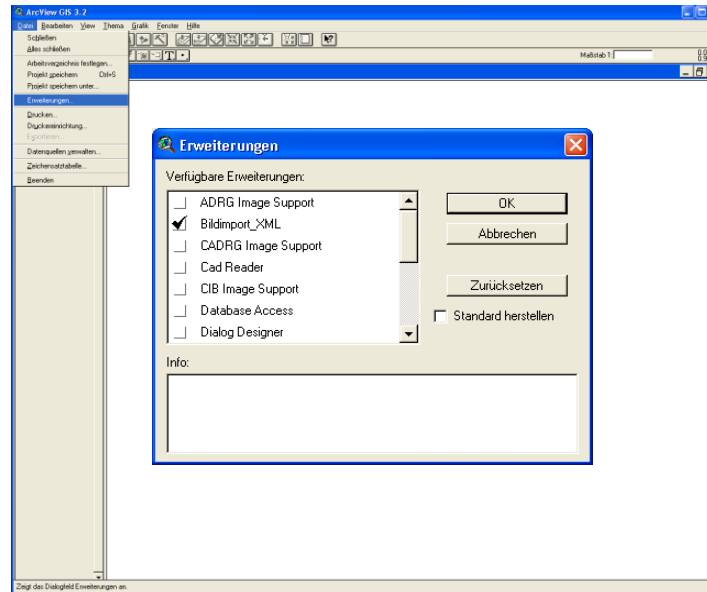
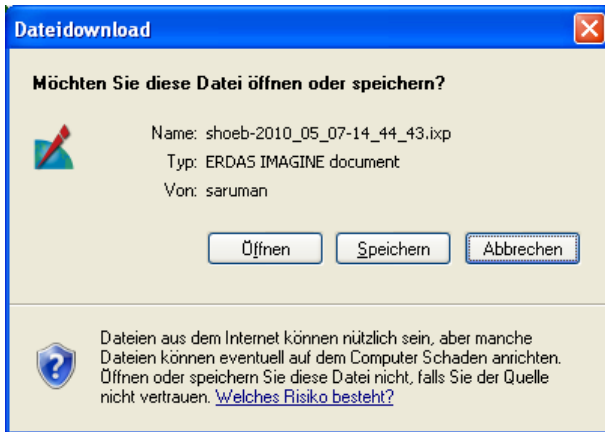
Data distribution: XML-file list (direct file access)



XML Editor



Data distribution: XML-file list (direct file access) (ArcView Extension)



Pain and success

▪ Pain

- Invested tax money for high-resolution flight campaigns
- Too many data to process and to provide in the original quality
- Interactive work to search for data
- Interactive work to reduce the spatial resolution for data distribution
- Heavy work-load for GIS-department – many responsibilities

▪ Success



- Automized data preprocessing for layer stacking and re-projection
- Data can be distributed in the original resolution
- Sachsenforst can now contribute to the SDI Saxony and INSPIRE
- Future-ready to provide data as service to the forester
- Easy to manage and to support configuration and system



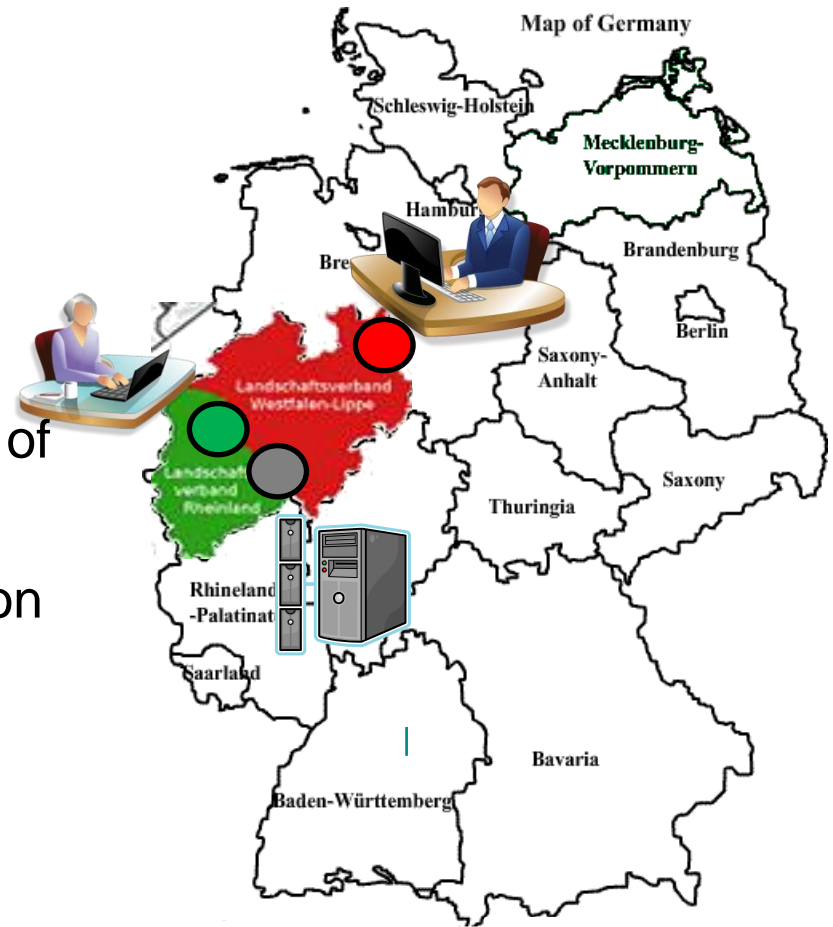


Fast data access of historical aerial data archive



Customer: Ministry of Internal Affairs of North-Rhine Westfalia

- Responsibility for bomb damage assessment for the State of North-Rhine Westfalia
- Acceptance certificate for new construction sites
- Proof of evidence for total evaluation of all available material
- Decentralized distribution of evaluation departments with different workflows



History: World War II in Germany and NRW



Bomb Removal using Historical Imagery

■ Removal of unexploded bombs in NRW:

- 2006: 132 tons of bombs removed, incl. 90 bombs with more than 250 kg
- 2007: 206 tons
- 2008: more than 1000 bombs 3 per day
- ... not finished before long

■ Historical imagery taken by the Allied forces

- 100000s now released to Germany
- bad radiometry, bad geometry, metadata?

■ Image Analysis:

- Important in **90%** of all detected unexploded bombs



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■ Image Analysis:

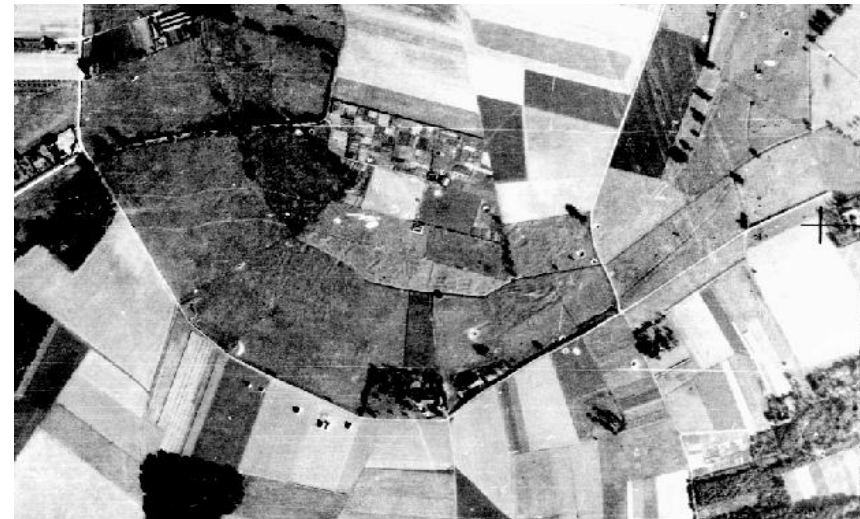
- Important in **90%** of all detected unexploded bombs

Slightest Movement Can 'Trigger A Catastrophe'

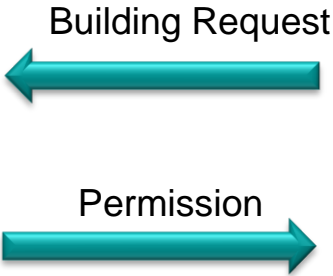


dpa

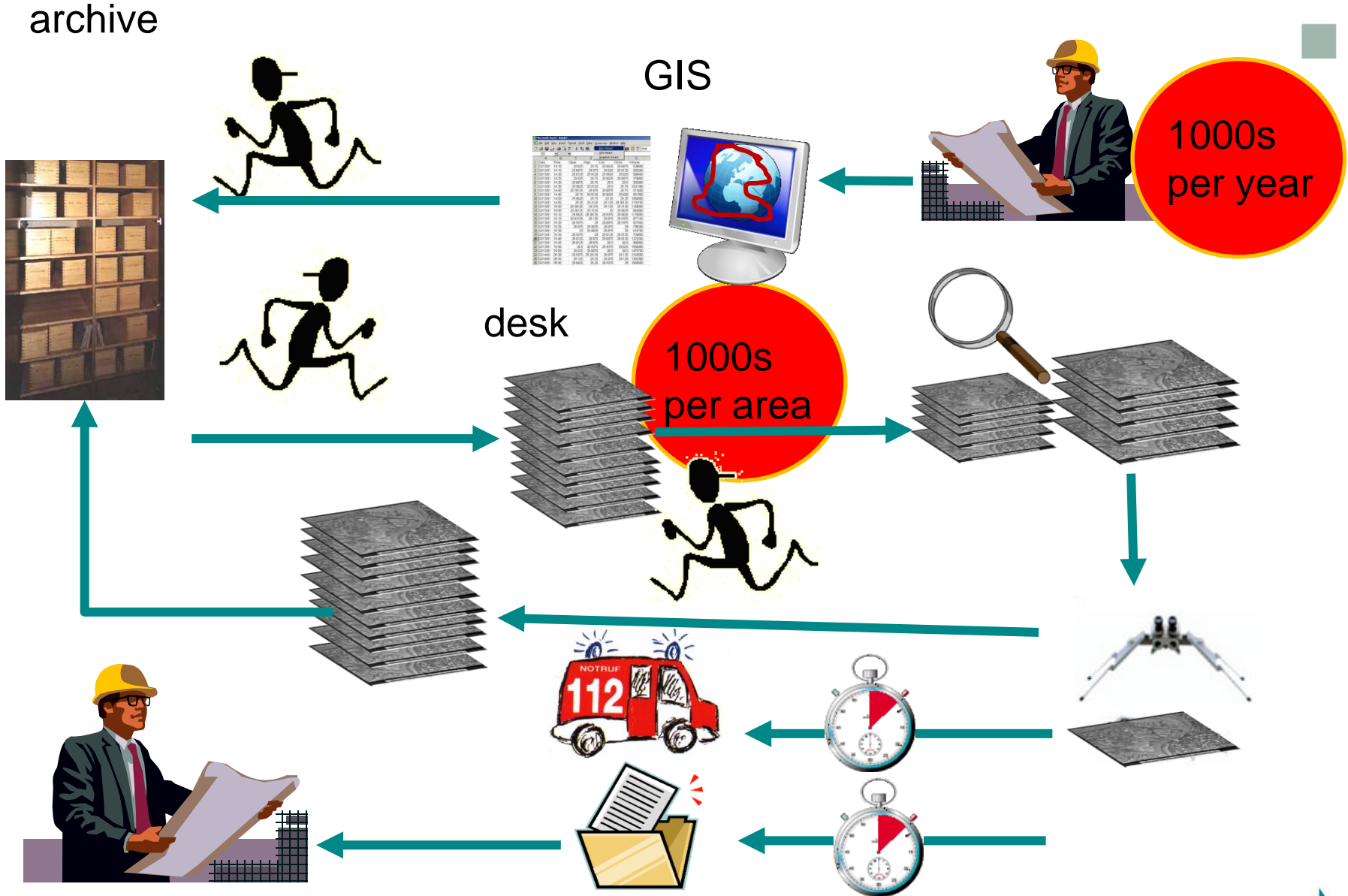
Following the deaths of three bomb-disposal workers in an explosion in Göttingen last week, Andreas Heil, head of explosives ordnance disposal firm Tauber, explains what went wrong and why it's so difficult to defuse the more than 100,000 unexploded World War II bombs still littering Germany.



Workflow

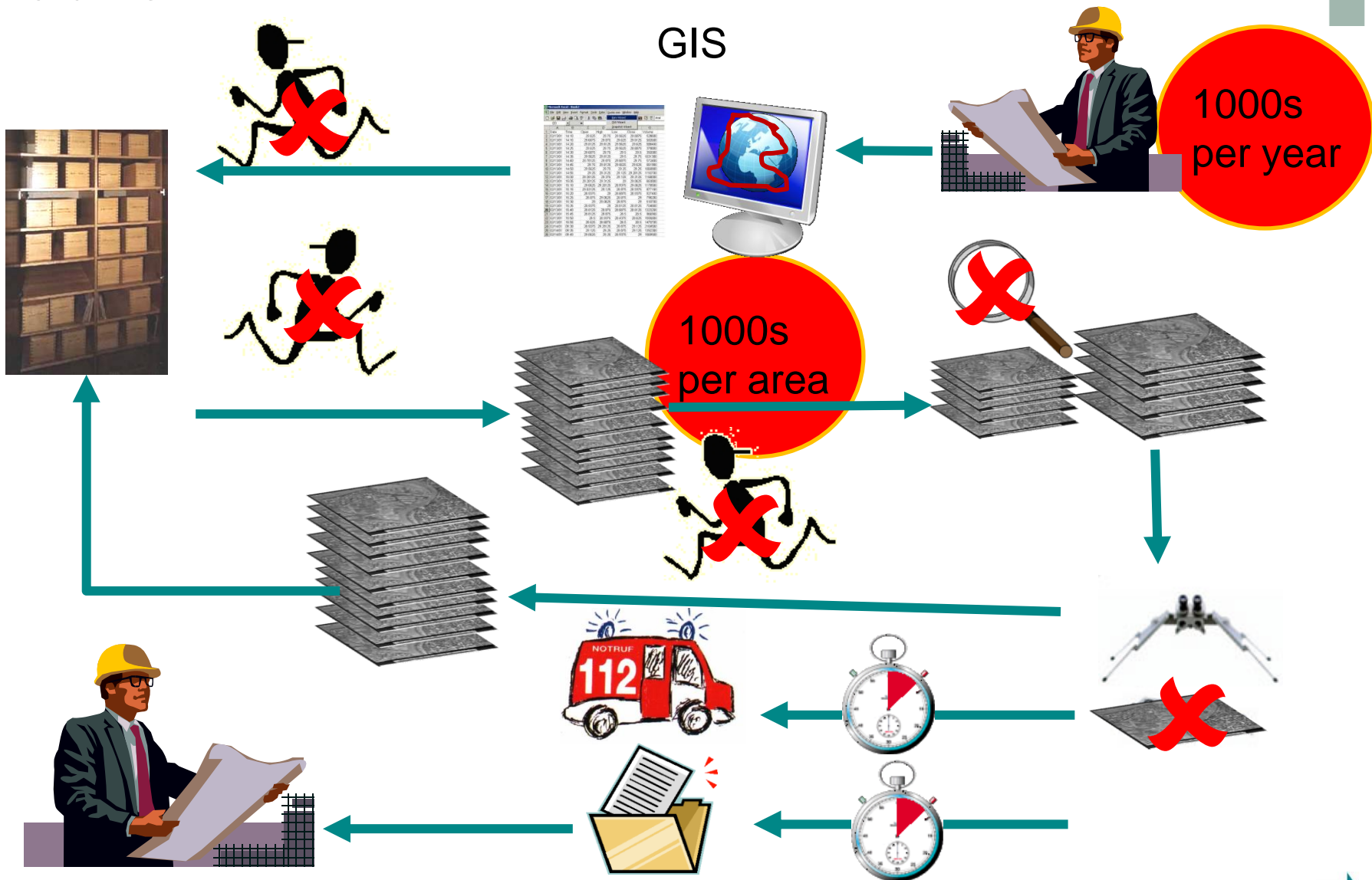


Workflow - traditional



Workflow - traditional

archive



HiRA – Key Features

Efficient task management

- incl. interoperability with GIS workflow

One web application to search and analyse

- 1000s images in one session
- no visual loss due to image transfer
- image operations to support analysis – brightness, contrast, rotate
- fast switching between images

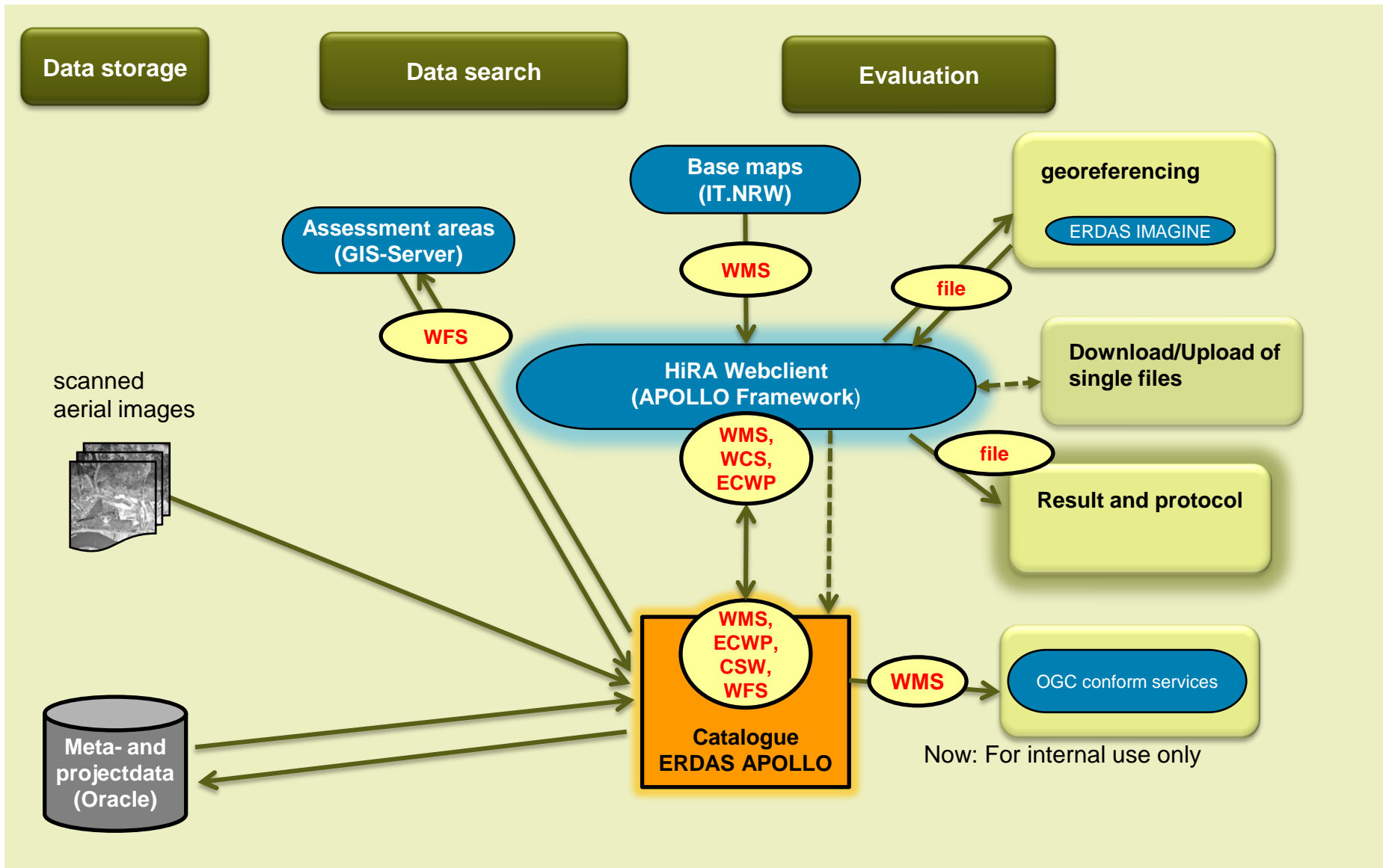
Centralized management of digital images

- > 350 000 digital images at IT.NRW
- accessed from teams in two remote sites (Düsseldorf, Hagen)
- high degree of automation for data admin
- data compression
 - careful use of storage
 - careful use of network bandwidth



Rasterdata
Archive

HiRA- architecture overview (status 04/2010)



HIRA Historical Rasterdata Archive - Workflow



- Workflow Screenshots (25-02-2010)



Footprint

Buffer

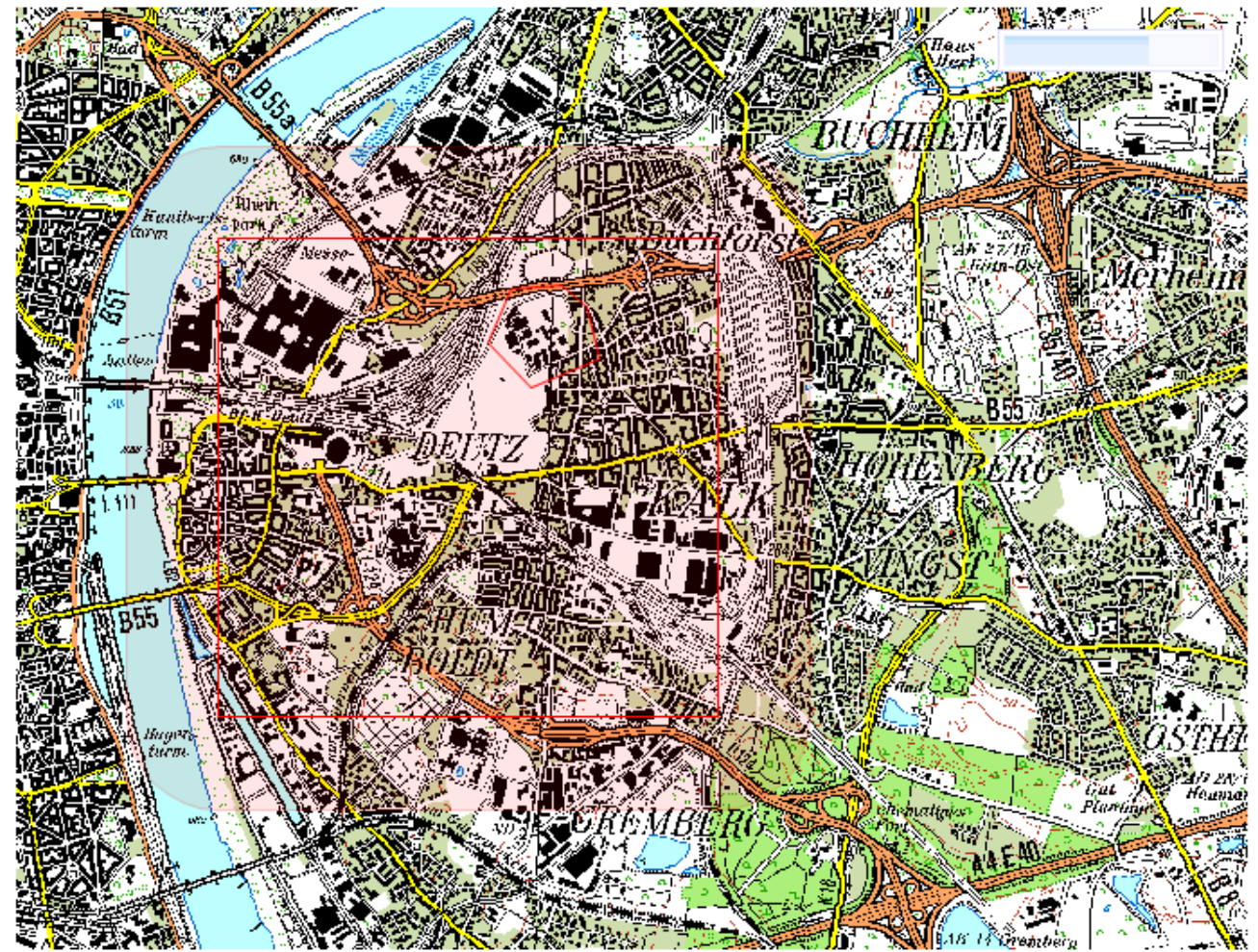
Acq.

Scale

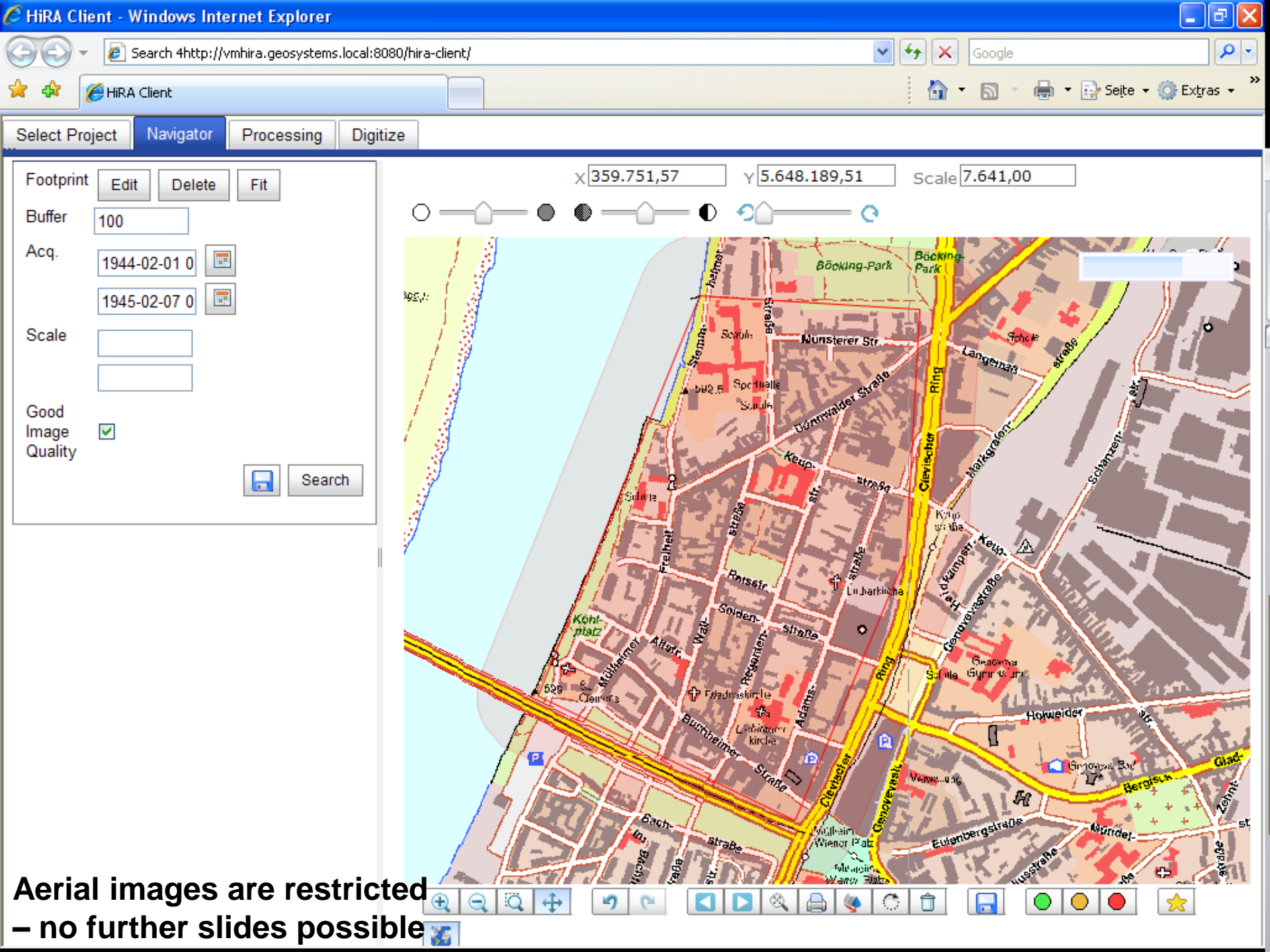
Good Image Quality

HIRA Client
http://vmhira.geosystems.local:8080/hira-client/

X Y Scale

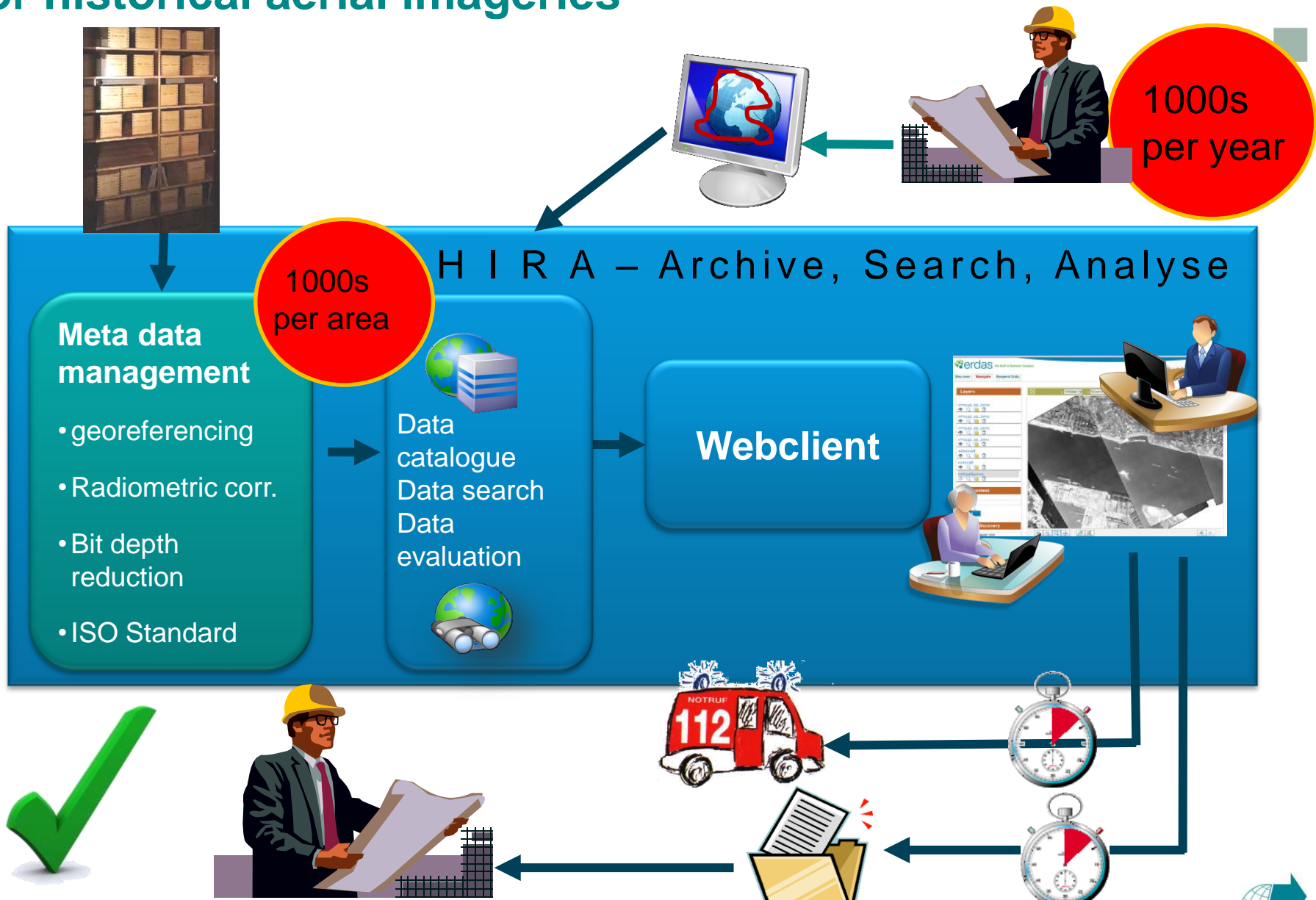


Map navigation toolbar with icons for zoom in, zoom out, pan, rotate, home, and other navigation functions.






Aerial images are restricted
– no further slides possible

HIRA: a modern, future-oriented data management for historical aerial imageries



Summary



-  **Workflow streamlining of a state survey service**
-  **Heterogeneous data in Forestry**
-  **Fast data access of historical aerial data archive**

- Forestry
- Oil&gas
- Defense
- State survey
- Cadastre
- Coast authority
- Land planning
- Ecology

Summary

- ERDAS offers a **wide range of tools** to be tailored for various geo-spatial tasks
- ERDAS provides many **out-of-the-box functions** for customers needs
 - ✓ Makro language
 - ✓ Batch processing
 - ✓ SDK
 - ✓ Standardized interfaces and languages (C, C++, Java)
 - ✓ OGC
- ERDAS provides all tools for **customization**
- GEOSYSTEMS Group has the **expertise** to support you
 - ✓ Consulting
 - ✓ Project layout
 - ✓ Project work
 - ✓ Training
 - ✓ Support
- **ERDAS and GEOSYSTEMS** helps you to save money and time for your geo-processing tasks





Thank you

Dziękuję bardzo !

For more information, please ask:

- **Irmgard Runkel, GEOSYSTEMS Germany**
i.runkel@geosystems.de
- **GEOSYSTEMS Polska**

Congratulations to
15 successful
years
GEOSYSTEMS
Polska

