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GIS-Land Records Integration Toolkit

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Directors
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Executive Summary

The integration of Geographic Information Systems (GIS) and land records can create modern property records systems, providing value for all stakeholders interested in researching and locating properties. The value to jurisdiction offices is the ability to combine and share data in an enterprise-wide environment where the data connects all departments. The value to the public is easy-to-use applications that will allow access to land records documents.

When integrating GIS and land records, a common key, or identifier, which is shared by GIS, assessors, and recorders, is essential. The most common and probably the best key is the Parcel Identification Number (PIN). “The use of PINs to link a wide variety of records of both the nature and extent of land features and interests is essential for the development of a modern land records and information system.”¹

GIS integration considerations may seem overwhelming to implement but, with today’s Land Records Management Systems (LRMS), these tasks become a routine part of day-to-day business activities.

Integrating data from the beginning when a document is created is a valuable approach to data management and will serve the jurisdiction and the public now and in the future. To improve understanding of the toolkit, read PRIA’s paper on [GIS and Land Records Integration](#).²

This toolkit will help facilitate the integration of GIS and land records by offering analysis and considerations. It was derived from real-world implementations with perspectives from recorders, LRMS vendors, GIS experts, and other industry partners.

¹ [Reference - Modernizing American Land Records, by Earl F. Epstein.](#)

² https://pria.us/wp-content/uploads/GIS_White_Paper_Consolidation_2021_05_19_REVIEWED.pdf

Overview of Integration

The goals of integration focus on connecting data across multiple offices through identifying parcels, enhancing document access via maps, and building a centralized, accurate, and accessible repository that supports statewide property record indexing. Key criteria include determining system users, document types, search capabilities, and integration scope, while challenges center on interdepartmental cooperation, funding, technology selection, staffing capacity, and expanding indexing practices beyond current policy requirements.

1. Define the goals of integration.

- a. Utilize a PIN to connect and share data from multiple offices including assessors, tax authorities, GIS, and recorders.
- b. Find documents related to a parcel of land by clicking on a map.
- c. Establish a repository with accurate index information.
- d. Enable data access from multiple devices, anywhere, and at any time.
- e. Provide additional services for constituents, including improved geographical access to documents.
- f. Lay the foundation for a statewide property records index³.

2. Identify goals for integration.

- a. Who will use this integrated system?
- b. Which document types will be available through the integrated system?
- c. What is the point in time (e.g., historical, date-forward) that defines how far back the search will go?
- d. What types of searches beyond grantor/grantee (e.g., PIN, legal description) will be accessible?
- e. What systems (e.g., LRMS, Computer-assisted Mass Appraisal [CAMA], GIS, tax administration) within the jurisdiction will be integrated?
- f. What other integration goals does the jurisdiction have?

3. Identify the challenges.

- a. Buy-in from other departments within the jurisdiction.
- b. Applicable technology solution and provider(s).
- c. Funding to pay for integration.
- d. Adequate workload capacity with current personnel.
- e. Recorder's willingness to index:
 - i. Information that is on the document but not required by policy or statute.
 - ii. Information that is not provided on the document, (e.g., PIN or property address).

³ https://pria.us/wp-content/uploads/State_Aggregated_Indexes_Master_STYLE_07_01_2026_FINAL.pdf

Current Integration Status

Recorders should assess their current level of integration with other public offices (e.g., GIS, assessor, tax authority, IT, etc.) and the degree to which PINs are indexed and maintained. Understanding and readiness of the office's LRMS capability to link with GIS mapping technology is key to integration. Determining in advance the availability of technical staff or consultants to support system connectivity, database management, and secure web-based access will save time and resources as integration proceeds.

1. Does the recorder's office currently integrate with other public offices within the jurisdiction? Buy-in from the following public offices is critical for successful integration.
 - a. GIS.
 - b. Taxing authority.
 - c. Assessor.
 - d. Surveyor.
 - e. Governing board or financial authorities.
 - f. Information Technology (IT).
2. Is the PIN being indexed?
 - a. Which department assigns/maintains the PIN?
 - b. Who ensures the accuracy of the PIN?
3. Which one of these levels best describes the current degree of integration in the recorder's office?
 - a. Level 0 –The assessor and/or GIS office gets a paper copy of the deed and posts to a map (many counties do this already).
 - b. Level 1 – The assessor and/or GIS office gets an electronic copy of the deed and updates GIS to reflect change(s).
 - c. Level 2 - A web-based platform allows deed information exchange between the recorder and the assessor and/or GIS office.
 - d. Level 3 - All recorded documents are electronically exchanged between the recorder and the assessor and/or GIS office.
 - e. Level 4 – Integration includes all rights, restrictions, and responsibilities in local government such as registry, history, restrictive local ordinances, and state and national restrictions.

- 182 4. What is the recorder's understanding of current capabilities and technology regarding the
183 LRMS?
- 184 a. A modern LRMS offers web connectivity, services integration, and an Application
185 Program Interface (API) or Secure File Transfer Protocol (SFTP). If these features are
186 in place, there may be an opportunity to work with the LRMS vendors to make the
187 image and index databases available for GIS connections.
 - 188 b. The LRMS should be capable of connecting and storing, at a minimum, the following
189 fields: PIN, address, and legal description.
 - 190 c. Options are typically available within the LRMS to provide a communications bridge
191 between the land records repository and the GIS.
 - 192 i. Put the desired document index information into a table, which the GIS can
193 connect. These tables are known as database views.
 - 194 ii. Provide a programming interface for other systems, including GIS, to connect
195 directly into the document database. This interface is known as an API.
 - 196 iii. Perform the Extract Transform and Load (ETL) process by extracting information
197 from the LRMS and generating tables that other systems can load and read.
 - 198 1. The robust functionality described in the examples in Appendix I
199 requires one of the connectivity options from #4 above.

200
201 The goal is a responsive system accessible from multiple devices (mobile, desktop, laptop,
202 and tablet) which enables the user to find documents based on location, using the
203 integrated system.
204

- 205 5. What is the recorder's access to GIS Mapping Technology?
- 206 a. The recorder's office will need access to web services that are either on a server or
207 hosted online.
 - 208 b. The recorder's office must have at least one secure login for a web-based mapping
209 solution or use a GIS server.
 - 210 c. If access is needed, the GIS office or assessor should be able to assist with these
211 services.
212
- 213 6. What is the availability of technical staff?
- 214 a. Are there in-house, dedicated GIS staff?
 - 215 i. If yes:
 - 216 1. Can they help with current parcel data and various aspects of the
217 web-based mapping solution?

2. Is the parcel data in a modern/current spatial database ? The ideal is to have parcel data in an enterprise [geodatabase](#)⁴, that is shared by entire organization.

ii. If not, consider working with an outside consultant.

b. Does the recorder have access to in-house database administration staff?

i. If yes, do they have the hours to commit to this, and can they coordinate with in-house GIS staff? Can they facilitate database access through automated routines?

ii. If not, consider working with an outside consultant.

c. Does the county or recorder's office have in-house IT staff?

i. If yes, Internal IT staff enables permissions and remote access for outside consultants. For example, an outside consultant would need to have a login/account for your SQL Server, with certain permissions.

ii. If not, work with whomever provides IT services to allow access and permissions for outside consultants.

Steps to Integration

Integrating GIS with county recorder property data involves validating the property references which link recorded documents to the PIN and then syncing updates back into the parcel map and related systems. Consider the following steps to begin the integration process.

1. When the PIN is required:

a. Confirm its presence on the document.

b. Validate and continue with normal recording procedures.

2. When the PIN is not required by statute or ordinance:

a. Request the document preparer to include the PIN on the document being submitted.

b. Educate the document preparers on the value of providing an accurate PIN and where to find it. This will offer:

i. Easier searching for title companies.

ii. Easier intra-jurisdiction searching.

iii. Ease and accuracy of indexing in the recorder's office.

iv. Opportunity for a single web access point with local government property information, including:

1. Address

2. PIN

⁴ <https://pro.arcgis.com/en/pro-app/latest/help/data/geodatabases/overview/types-of-geodatabases.htm>

- 256 3. All recorded documents
- 257 4. Links to probate, family court and vital records
- 258 5. Tax bills
- 259 6. Easements
- 260 7. Assessment information
- 261 c. Determine and validate the PIN via property address and legal description.
- 262
- 263 3. When deciding to capture the PIN:
- 264 a. Start with a point in time and go forward.
- 265 b. Determine if you want to integrate older documents.
- 266 i. How much PIN history is available?
- 267 ii. How far back are electronic documents available?
- 268 iii. Has the PIN format changed over time?
- 269 iv. Is PIN genealogy available?
- 270
- 271 4. Accuracy of the PIN on the document:
- 272 a. Key it (PIN) as you see it (unverified).
- 273 b. Correlate the PIN to the address and legal description. An LRMS, as well as the
- 274 assessor or taxing authority, can provide tools or aid to ensure accuracy of the PIN.
- 275 c. Add the corrected PIN, in addition to the original PIN, into the index, if applicable.
- 276 d. Police the accuracy of the PIN throughout the implementation.
- 277 e. Be cognizant of the genealogy of the parcel – splits and joins – to be able to link
- 278 older documents with the current parcel map.
- 279
- 280 5. Major players for this integration effort:
- 281 a. IT - for handling database programming or to enable data access
- 282 b. Assessor – for the PINs, tax maps and data stored in assessment software
- 283 c. GIS department – for aggregating data for mapping applications
- 284 d. Address authority – for providing one of the key foundations for implementation
- 285 e. Recorder – for providing the authoritative source for the records
- 286
- 287 6. Additional players in integration efforts:
- 288 a. Zoning authority – for identifying use restrictions
- 289 b. Tax authority – for taxing information
- 290 c. Public Works/Transportation – for easements and rights-of-way
- 291 d. Surveyors – for the legal description
- 292
- 293 7. Additional beneficiaries:
- 294 a. Law enforcement – for determining location, situational awareness, and ownership
- 295 b. Emergency services – for determining location

- c. Treasurer's office – for collecting taxes
 - d. Courts – for determining ownership interest
 - e. Municipalities – for economic development and public works
8. Who may object:
- a. Policymakers – for legal concerns and benefits analysis
 - b. Budget office – for initial and maintenance costs
 - c. The public – for privacy concerns
9. Meetings with stakeholders:
- a. Solicit buy-in by emphasizing benefits.
 - b. Discuss implementation.
 - c. Address impacts to different offices and industries.
 - d. Educate the public.
10. Implementation schedule:
- a. Prepare for implementation delays.
 - b. Determine how and when major players will be affected.
 - c. Consider what could go wrong with the implementation project:
 - i. Stakeholders change their priorities or do not make a long-term commitment to the project.
 - ii. Newly elected officials may have different priorities.
 - iii. LRMS and the assessor system become out-of-sync with installation of new system or software.
 - iv. Staffing and budget restraints affect the project costs.
 - v. Lack of staff training in programming capabilities.
 - vi. New legislation affecting privacy and redaction of key information in the public record.
 - vii. Change in licensing agreements if additional necessary capabilities are not included in the current the GIS platform.
 - viii. Cyberattacks affecting the implementation process.
 - ix. Declared State of Emergency.

Conclusion

Use this PRIA toolkit to start an integration project, recognizing that not all historic records may be integrated at the same time. Don't let the lack of a perfect plan deter the process. Understanding the desired endpoint helps with making decisions required throughout the project. A process can and will evolve. Laying the foundation and starting the implementation is a major step for the future.

GIS and land records integration will result in a new web map that can be added to the other applications your GIS department has online, and it can be added to a recorder website. Easy access to authoritative information is now the norm. Integration of land records with GIS allows the recorder to keep pace with this trend and modernize access to the land records.

For live examples of integration on the web, see below.

Appendix 1

The following examples demonstrate the use of parcel information and GIS integration.

[Chisago County, MN](#)

[Racine County, WI](#)

[Waushara County, WI](#)

[Greene County, OH](#)

[Jefferson County, WA](#)

Appendix 2

GIS & Land Records Integration Readiness Audit

Check applicable boxes and add up the readiness score below.

Section 1: Governance & Stakeholder Alignment

- ☐ Executive leadership fully supports GIS integration
- ☐ Recorder, Assessor, GIS, IT, and Tax offices participate in planning
- ☐ Roles and responsibilities are documented
- ☐ Funding source has been identified
- ☐ Project leader(s) has been designated
- ☐ Stakeholder meetings occur regularly

Total for this section: ___ out of 6

Section 2: PIN Readiness

- ☐ PIN exists for all taxable parcels
- ☐ PIN format is standardized across the jurisdiction
- ☐ PIN is included in recorder indexing practices
- ☐ PIN accuracy is routinely validated
- ☐ Parcel genealogy (splits and combines) is maintained
- ☐ Historical PIN records are available

Total for this section: ___ out of 6

Section 3: LRMS Readiness

- ☐ LRMS supports API or SFTP connectivity
- ☐ LRMS supports database views (e.g., table view)
- ☐ LRMS supports ETL exports
- ☐ PIN field exists in LRMS
- ☐ Address field exists in LRMS
- ☐ Legal description field exists in LRMS
- ☐ Document images are electronically accessible
- ☐ LRMS vendor supports GIS integration efforts

Total for this section: ___ out of 8

Section 4: GIS Readiness

- ☐ GIS parcel layer is maintained digitally
- ☐ GIS data resides in an enterprise geodatabase
- ☐ GIS web services are available
- ☐ Secure GIS access is available
- ☐ GIS parcel layer is updated regularly
- ☐ GIS staff are available to support integration

400 **Total for this section: ____ out of 6**

401 **Section 5: Data Quality**

- 402 ☐ Parcel records contain PIN, address, and legal description
- 403 ☐ Data quality reviews occur regularly
- 404 ☐ Missing PINs can be identified systematically
- 405 ☐ Duplicate PINs are identified and resolved
- 406 ☐ Historical records can be linked to current parcels
- 407 ☐ Data correction procedures are documented

408 **Total for this section: ____ out of 6**

409 **Section 6: Technical Capacity**

- 410 ☐ Dedicated GIS staff available
- 411 ☐ Database administrator available
- 412 ☐ Internal IT support available
- 413 ☐ External consultant support available if needed
- 414 ☐ Staff have GIS/LRMS integration training
- 415 ☐ Cybersecurity controls are in place

416 **Total for this section: ____ out of 6**

417 **Section 7: Public Access & User Experience**

- 418 ☐ Public-facing web application exists
- 419 ☐ Users can search by PIN
- 420 ☐ Users can search by address
- 421 ☐ Users can search by legal description
- 422 ☐ Documents can be accessed from a map
- 423 ☐ Mobile access is supported

424 **Total for this section: ____ out of 6**

425 **Section 8: Implementation Readiness**

- 426 ☐ Integration goals are documented
- 427 ☐ Scope is defined
- 428 ☐ Timeline exists
- 429 ☐ Budget exists
- 430 ☐ Risk assessment completed
- 431 ☐ Staff training plan exists
- 432 ☐ Public communication plan exists

433 **Total for this section: ____ out of 7**

434

435

436 **Overall Readiness Rating:**

437 0–25 = Low readiness

438 26–40 = Medium readiness

439 41–50 = High readiness

DRAFT