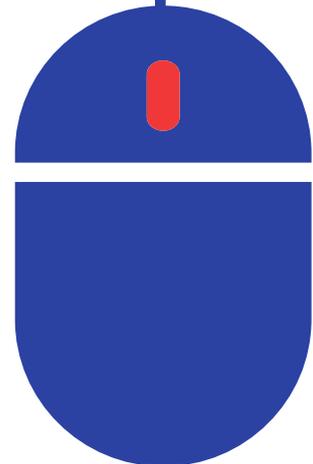


# CITIZEN CENTRIC RERA PORTAL

February 2022

*Driving citizen friendly  
outcomes in a modular,  
standardized, and  
scalable manner*



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# Acronyms

Acronym	Description
AI	Artificial Intelligence
AP	Andhra Pradesh
API	Application programming interface
APR	Annual progress reports
BI	Business Intelligence
CA	Chartered accountant
CERT-In	Indian Computer Emergency Response Team
CRM	Customer Relationship Management
CMMC	Cybersecurity Maturity Model Certification
FAQs	Frequently Asked Questions
GIGW	Guidelines for Indian Government Websites
GST	Goods and Service Tax
GSTIN	Goods and Service Tax Identification Number
IEEE	Institute of Electrical and Electronic Engineers
ISO	International Organization for Standardization
IT	Information technology
MCA	Ministry of Corporate Affairs
MeitY	Ministry of Electronics and Information Technology
MH	Maharashtra
MIS	Management Information System
ML	Machine learning

Acronym	Description
MoHUA	Ministry of Housing and Urban Affairs
MP	Madhya Pradesh
NBFC	Non-Banking Financial Company
NIC	National Informatics Centre
NUIS	National Urban Information System
OCR	Optical Character Recognition
OTP	One time password
OWASP	Open Web Application Security Project
PE	Private Equity
QPR	Quarterly progress reports
REIT	Real estate investment trust
RERA	Real estate regulatory authority
RTI	Right to Information
SEO	Search Engine Optimization
STQC	Standardization Testing and Quality Certification
TAT	Turn Around Time
TCP	Town and Country Planning
UAE	United Arab Emirates
UI	User Interface
UP	Uttar Pradesh
USA	United States of America
UT	Union Territories
UX	User Experience
WCAG	Web Content Accessibility Guidelines

# Foreword



Real Estate Regulatory Authorities are set up in each State of India are the custodians of a rule-based, standardized, and predictable regulatory regime for the real estate sector. This has strengthened the mechanism to protect home buyers' interests by institutionalizing a process for quick resolution of complaints and standardizing reporting of financial and project reports from promoters.

**Portals are the primary mode of interaction with all the stakeholders in the RERA ecosystem.** The endeavor of all State RERAs should be to digitize all possible interactions and filings and reduce reliance on traditional modes in the interest of the greater public good. Also, RERA portals have the potential to showcase the power of digital and innovation in service delivery for the entire Government sector in India.

**In Himachal Pradesh, we in RERA have made it our mission** to work with Real Estate Project promoters, real estate agents, home buyers, and technology providers to **create a best-in-class digital experience for all the stakeholders.** Digital initiatives like revamping RERA portal to make it more user centric as well as improving Authority's effectiveness are underway at H.P. RERA. Putting digital tools and cutting-edge technology to improve home buyers' lives is at the heart of our initiatives. We hope that the HP RERA portal will become an example of a best-in-class consumer centric RERA portal for other States.



**The conversations around creating common formats for State RERA and the creation of a national RERA portal is also gaining momentum**

The standardization efforts can draw on the learnings of all the RERA to make the user experience seamless for stakeholders. Availability of project-level data and judgments can empower policymakers, Government bodies, and private sector participants to make more effective decisions.

ONI works extensively on the mandate of property rights. Digital tools and improving access to property rights are at the center of the efforts of ONI in building a more secure future for property holders. In this context, even though RERAs have come a long way in evolution of their portal, there was a need to create a model document to further improve citizen centricity.

Therefore, in an effort supported by ONI, this study, done by Praxis Global Alliance, focuses on creating a model for a citizen-centric RERA portal. We, from H.P, RERA, had the privilege to be partner with them on this journey.

This report's objectives is three-fold – first, **to benchmark existing portals of different states and understand the pain points of the different stakeholders** to understand the digital readiness and identify action items for RERA. Second, **to identify and prioritize different future-ready digital modules for the RERA** to draw inspiration from as they create a roadmap to improve their portals. Third, **to offer a set of guiding principles and requirements for the key front-end modules, back-end modules, and training and documentation requirements.**

**The study espouses six key design principles – scalability, interoperability, flexibility, modularity, privacy, and ease of operation.** Design elements for frontend and backend modules are expected to empower the State RERA to design their digital roadmap.

Design elements for Front-end and Back-end modules are expected to empower the State RERA to design their digital roadmap.

**Considering the heterogeneity of real estate ecosystem in different states and the digital readiness of different RERA, the report outlines modules separately for small and large RERA.** The modules are further bucketed in 'must-have' and 'good-to-have' features. The must-have modules form the backbone of a citizen-centric RERA portal. Good-to-have modules should be implemented based on the digital readiness of the State RERA.

The report also advocates for a system of a universal, geo-referenced ID for all real estate properties - an India Real Estate ID (on the lines of Aadhar). It is expected to be a unique ID repository of all real estate properties in India. The real estate ID can power a host of use cases for the private and Government sector and reduce revenue leakage for the Government.

**I hope this study will be a foundational building block towards improving State RERA portals** as they embark on the journey of improving citizen-centricity. I congratulate Omidyar Network India and Praxis Global Alliance to bring forward the next-gen thinking on creating a citizen-centric RERA portal in the country.

**Dr. Shrikant Baldi (I.A.S Retd.)**

Chairman, HP RERA

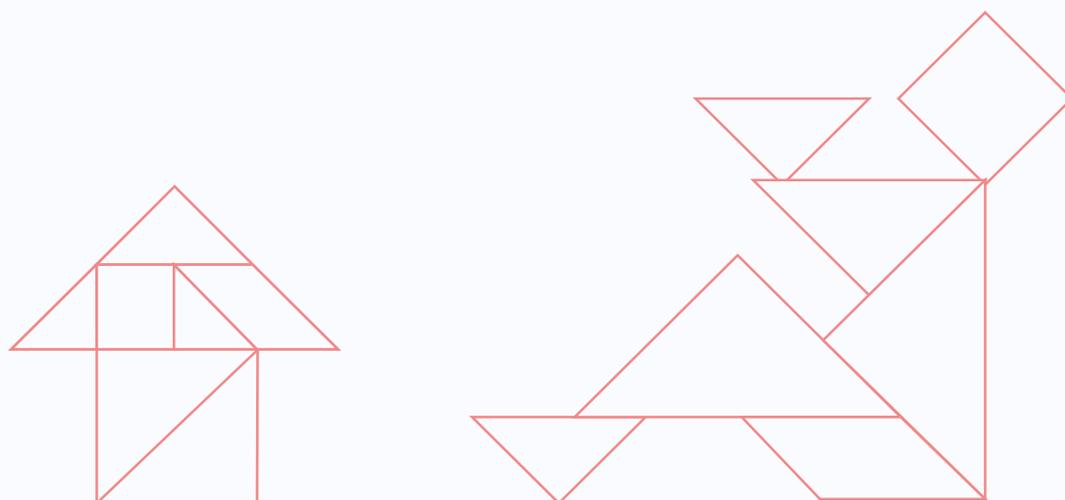
# Executive summary

Real estate is an important driver and enabler of economic activity. The real estate sector in India is a US\$ 130B market as of 2020 and is projected to reach US\$ 640B by 2040<sup>1</sup>. Rapid urbanization, the Government's focus on 'Housing for All', REITs, and improving incomes will lead to rapid growth of the sector. India's rank in the Global Real Estate Transparency Index in 2020 was 34 out of 99 evaluated countries.<sup>2</sup> India also saw a substantial improvement in the Global Real Estate Transparency Index between 2018 and 2020.

## RERA Act

The Government of India introduced the Real Estate (Regulation and Development) Act (RERA) in 2016, a seminal regulation in the real estate sector and has created the sector's first regulator in nearly every state in India. It aims to improve the trust level in the real estate ecosystem. The Act also aims to:

- Protect buyers' interests by institutionalizing a process for quick resolution of complaints, standardize reporting of financial and project reports from promoters, and introduce a mandatory defect liability period
- Create a rules-based, standardized, and predictable regulatory regime for the real estate sector



<sup>1</sup> NITI Aayog estimates

<sup>2</sup> Global Real Estate Transparency Index, 2020 published by JLL

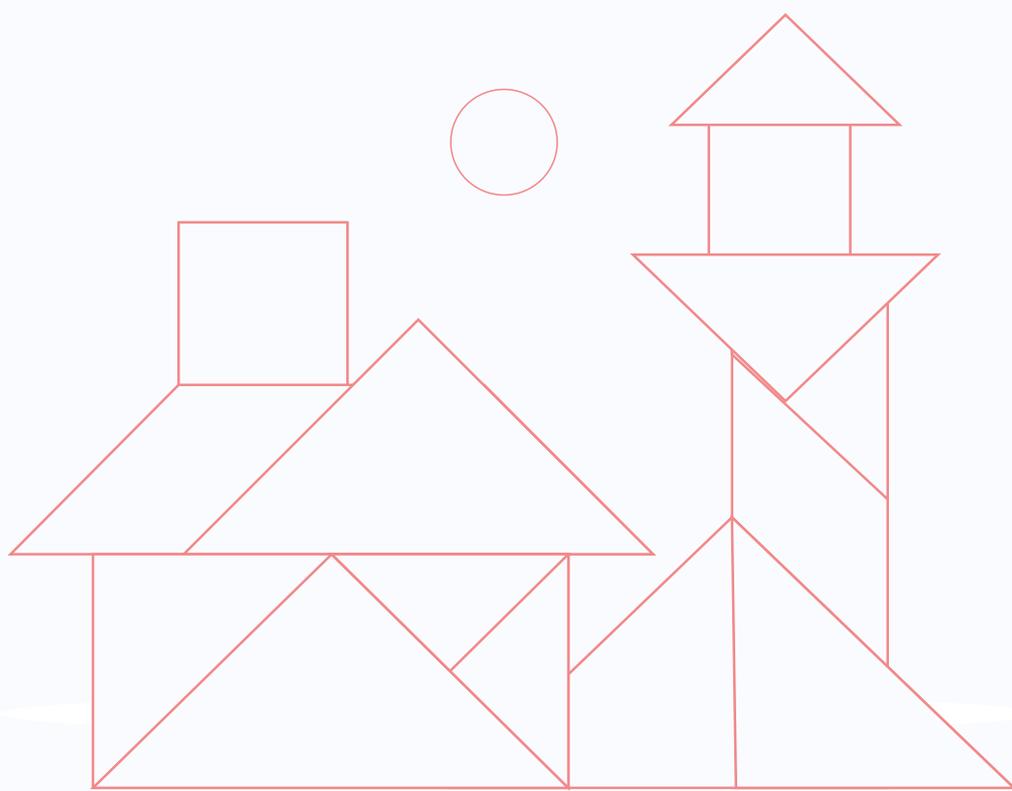
## Objective of this report

This report presents a model framework for a citizen-friendly RERA portal for a diverse and heterogeneous market like India. The report aspires to improve the overall citizen-friendliness of RERA portals by developing a holistic roadmap to drive innovation. It aims to account for the complexity of interactions and takes an end-to-end stakeholder journey approach to rethink the design of RERA portals. The report covers recommendations for improving the state RERA portals, national rollout by creating a national RERA portal, incorporating key design elements, best practices, and detailed module overviews.

## Methodology adopted

This study has undertaken a comprehensive benchmarking of features across existing RERA portals, detailed discussions with stakeholders, and extensive secondary research, including a study of features in relevant Government portals for service delivery in India and overseas, as well as portals and apps of leading real estate classifieds.

- 01 Benchmarking features across existing RERA portals:** Features from RERA portals of Gujarat, Maharashtra, Delhi, Karnataka, Andhra Pradesh, Madhya Pradesh and Haryana were benchmarked extensively to map the current digital readiness and best practices of RERA portals
- 02 Detailed discussions with stakeholders:** This study incorporates perspectives of multiple stakeholders such as buyers, promoters, advocates, real estate agents, financiers, researchers, public policy experts and RERAs
- 03 Extensive secondary research:** Extensive secondary research to study innovations in digital service delivery by Governments in India, Singapore, UAE and the USA was also carried out. The research also included benchmarking and learning from the portals and apps of real estate classifieds



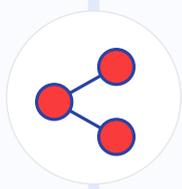
## Design principles

The key design principles for a customer-centric RERA portal which have guided this paper's framework are scalability, interoperability, flexibility, modularity, privacy and ease of operation.



### Scalability

As the Indian real estate market grows, the scale and scope of the RERAs will also get enhanced. Hence, the report aims to create an architecture that is scalable and will support rising volumes and use cases going forward.



### Interoperability

Interoperability allows for seamless transfer of data, similar and familiar process flows and standard log-in credentials. Interoperability between state RERA portals and integration with the national portal is expected to improve risk management, user experience, standardization, and efficiency of compliances. By integrating with third-party data sources, RERAs can tap a host of new data sources (like credit rating, sales, satellite mapping, social media, inventory availability data on real estate classifieds portal, etc.) to improve the effectiveness of the RERA Act.



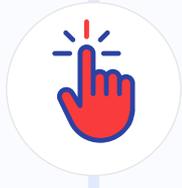
### Flexibility

Because India is a heterogeneous market, flexibility in terms of applicability of different modules will vary with the size and scale of operations of the RERAs. The report proposes two model portals depending on the size of the real estate market of the respective state/UT's RERAs. It also identifies must-have and good-to-have features/modules for both categories of RERAs.



### Modularity

Modular design envisages a block-grid or 'lego blocks' approach to web application design to provide future scalability and interoperability. Hence, the paper presents functionalities in a modular fashion- which can be adopted largely independent of each other. Different functionalities can be decoupled and adopted at different timescales. As RERAs' digital sophistication improves, they may implement more advanced modules.



### Ease of operation

End-users are at the center of the approach to create the model platform. Feedback collected from different stakeholders is incorporated in the model platform to improve ease of operation.



### Privacy

Data privacy is at the center of all digital platforms. The model RERA portal is expected to comply with the data privacy recommendations like multi-factor authentication for critical requests, storage of information, reporting of data breaches, along with a well-defined data protection policy.

## Elements of design

The report covers key elements of design like Front-end and Back-end modules for the model customer centric RERA platform. Elements of the portal are different based on the complexity, scope and volume of projects handled. Hence, the report highlights 'must-have' and 'good-to-have' features/modules for small and large RERAs.

The key modules covered in the report are:



### Front-end modules:

Homepage, overall website usage experience, visitor process flows, log-in architecture, project and agent registration, compliance and reporting, promoter/professional and project dashboards, complaints and grievance redressal system, allottee dashboard, mobile app, a unique ID for properties, user friendly additional features, data availability in public domain, and overall guiding principles.



### Back-end modules:

RERAs dashboards and reports, document management system, user management, approval workflows, web-services linkages, e-court management system, data privacy, analytics and risk management, financial mgmt. and dashboards, and overall guiding principles.

## Key recommendations for a national rollout and improving individual state RERA portals:

Considering the **heterogeneity of the Indian market**, RERAs should aspire to build their portal from a standard 'menu' of modules/functionalities envisioned in this report:

- The modules are classified into two major groups – 'must-have' and 'good-to-have'. Considering the scale of different RERAs, the report classifies the modules for small and large RERAs separately
- **Must-have modules** are the basic building blocks for the RERA portal. A few examples of the must-have modules are registration of projects and agents, compliance and grievance redressal mechanism, dashboards, multilingual content, and payment management systems, etc.
- **Good-to-have modules** are the next-gen functionalities to improve user-centricity and risk management apart from additional use cases powered by the RERA portal. A few examples of the good-to-have modules are pre-registration facilitation, promoter and project grading system, advanced predictive analytics, etc.

**A working committee should be set up by a central authority such as MoHUA to drive standardization, create a national portal for RERA, and improve knowledge dissemination among state RERAs:**

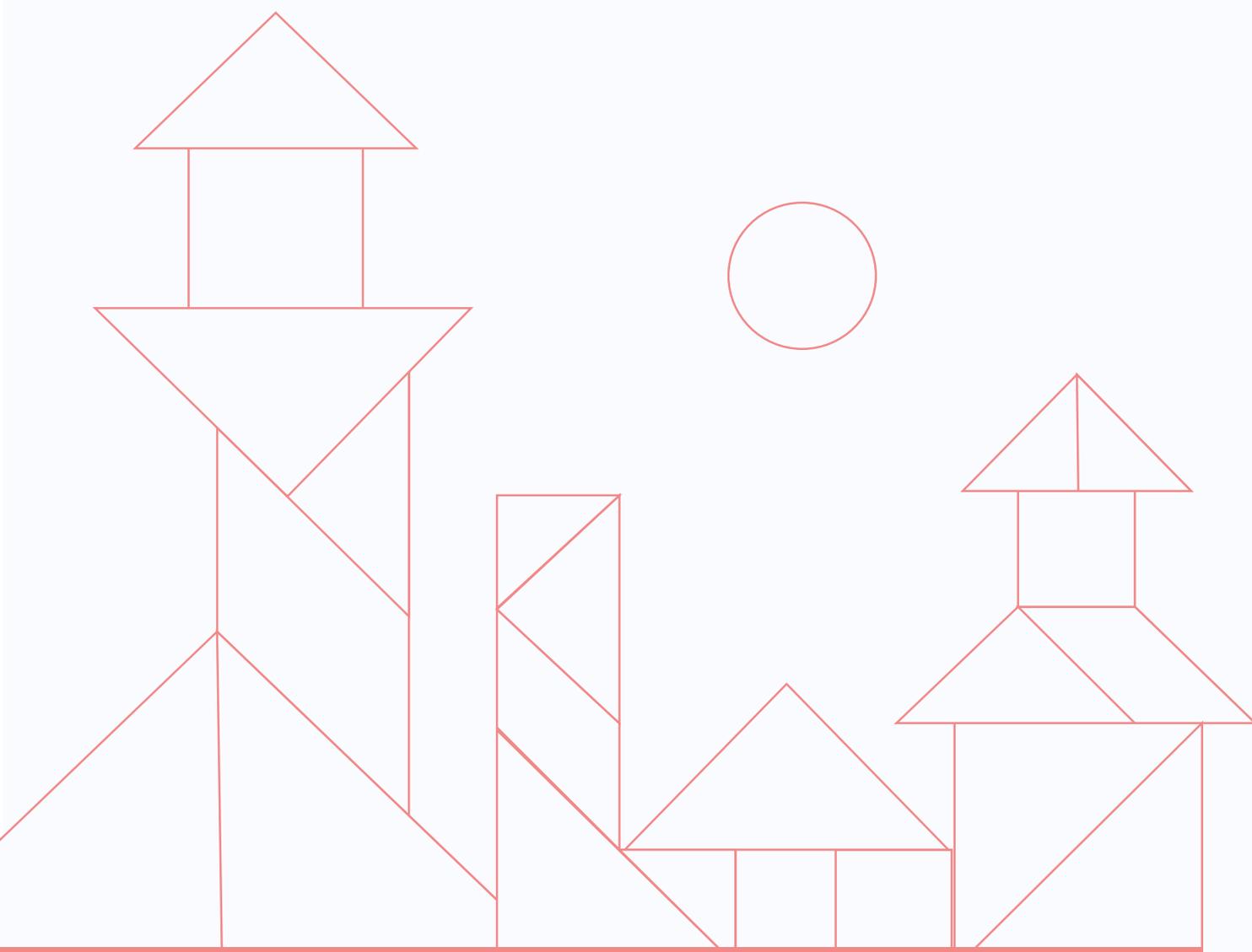
- The working committee should have **representatives of state RERA as well as the central Government**
- The charter of the committee should be to **standardize data** formats for capturing information and user experience, and to design and drive creation of a **national RERA portal** (by aggregating information from different RERA portals)
- **Interoperability across RERA portals will strengthen the risk management** processes (by improved visibility of complaints and redressal data across states, best practices transfer between states, etc.) thereby protecting the buyers' interests

**Improving user-centricity and growing digital maturity** of RERAs should lead to better outcomes for all stakeholders:

- **Improving user-centricity is a journey.** State RERAs should identify a clear roadmap to improve functionality based on their unique needs. The model modules/functionalities are available in this paper
- **As the digital maturity of RERAs improves, more complex and next-gen modules** (like drone monitoring, advanced predictive analytics, promoter and project grading system, etc.) **should be implemented**

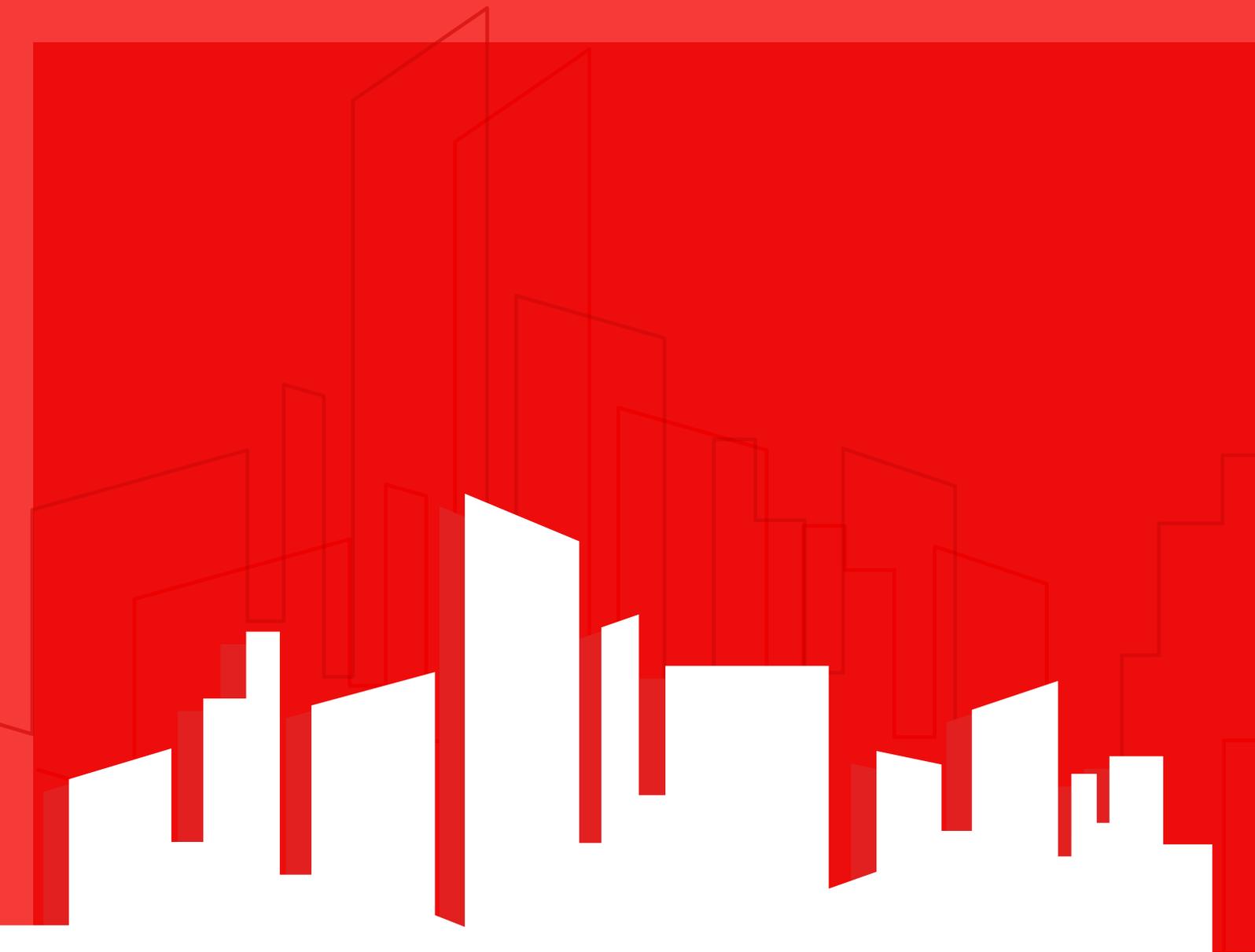
**Build an India Real Estate ID, which is a universal, unique ID repository of all real estate properties in India, and create a national RERA portal** to synthesize and disseminate information related to real estate:

- **India Real Estate ID** – a unique geo-referenced ID for all real estate properties (on the lines of Aadhaar) in India. The real estate ID can power a host of use cases for the private and Government sector (with better accuracy of maps and addresses helping logistics/last-mile delivery sectors, mobility players, advertisers, financiers, etc.) and reduce revenue leakage for the Government
- **RERA State Authority should be the custodians of the India Real Estate ID ecosystem**
- Interoperability of platforms to create a **national RERA portal** to synthesize and disseminate the critical real estate project-level information in a structured manner





# 1 Introduction



The enactment of the RERA Act and its implementation are steps in the right direction to promote the real estate sector by creating a regulatory authority for the sector. Each RERAs is expected to have a functional portal. The RERAs are institutions 'created' in the digital era and hence the adoption of digital technologies should be high as they start off on a clean slate without a significant burden of legacy offline systems.

In an effort supported by Omidyar Network India, Praxis Global Alliance has undertaken a study to understand the pain points of different stakeholders in using RERA portals and create a model document outlining the required functionalities for the portal. The objective of the study and the model document is to enable the creation of stakeholder-friendly and consistent portals across states while adopting a modular approach so that state RERAs can adopt the modules most relevant for them.

**This report outlines our findings from stakeholder discussions, RERA portal benchmarking and RERAs discussions.** We have conducted 40+ in-depth conversations with stakeholders like promoters of real estate project, agents, RERA advocates, allottees, complainants, financiers and RERAs about their expectations from the RERA portal. The report also covers the functionalities for small and large RERA portals from a model RERA portal perspective. Also, we have benchmarked the RERA portals of Gujarat, Maharashtra, Karnataka, Madhya Pradesh, Andhra Pradesh, Karnataka, Haryana, Delhi, Himachal Pradesh apart from evaluating the mobile app of Chhattisgarh and Uttar Pradesh. The report especially benefits from the inputs from Himachal Pradesh RERAs and their support in setting up conversations with other RERAs executives.

We found that the current RERA portals of different states have evolved over a period but still deficiencies across portals remain; resolving the deficiencies will make the experience of all stakeholders smoother and improve transparency for citizens.

### Exhibit 1.1



## About RERA Act and state level establishment of RERAs

The Real Estate (Regulation and Development) Act, 2016 seeks regulation and promotion of the real estate sector and ensures the sale of real estate projects efficiently and transparently. It aims to protect buyers/consumers' interests in the real estate sector and establish an adjudicating mechanism for speedy dispute redressal.

According to the Act, each state and union territory is expected to have its regulator and set of rules to govern its functioning. The regulatory body is expected to protect each stakeholder's interests under its regulation, and it must establish an adjudicating mechanism for speedy dispute redressal. Additionally, it also regulates the functioning of promoters and agents. It forbids promoters and agents to book, sell, advertise, market, or even facilitate the sale of any residential/commercial projects (above 500 sqm of size or having >8 units) in the state without registration with RERA. Also, it ensures the financial discipline among promoters and create a transparent system across different stakeholders to regulate the initiated project's financial and physical progress. Key highlights of different provisions are as follows:

**Registration of real estate projects and agents:** Projects above 500 sqm of size or having more than 8 units are required to register with RERA. Promoters cannot sell the projects without registering with RERA and they cannot charge more than 10% advance for the project. All the agents dealing in real estate sales are also required to register with RERA

**Complaints redressal mechanism:** A full-fledged complaints redressal mechanism is envisaged under the RERA Act. Any person aggrieved by the decision of the RERAs may file an appeal to the High Court

**Improved financial discipline:** Promoters are restricted from taking advance of more than 10% of the total price of the unit from a person without entering a written argument of sale. Promoters are required to maintain two accounts for each real estate projects one each for 70% and 30% of the proceeds from the sale. The account with 70% of the proceeds needs to be utilized to cover the cost of the project only

**Improved transparency:** Promoters are required to submit, to the RERA, details around approved project plan, layouts, proposed vs sanctioned number of buildings, stage-wise schedule, expected completion date. Also, they are required to give details for ongoing financial and physical progress, summary of allottees, and list of approvals taken at the end of each financial quarter as part of quarterly progress report

## Exhibit 1.2



## Outline of the report

Chapter	Purpose
 Designing model RERA portals	Summary of the feedback from stakeholders, benchmarking of the RERA portals of different states, requirement of detailed functionalities from a model RERA portal
 Front-end requirements of model RERA portal	Detailed overview of Front-end requirements for a model RERA portal basis the size of the RERAs
 Back-end requirements of model RERA portal	Detailed overview of back-end requirements for a model RERA portal basis the size of the RERAs
 Sharing best practices between authorities, training, and documentation	Best practices and guidelines for sharing best practices between authorities, and guidelines for trainings and documentation for the RERAs

## Classification of RERAs based on size

In a country as heterogeneous as India where population of the largest state by population (Uttar Pradesh) is ~330 times<sup>3</sup> of the smallest state (Sikkim), we need to adapt the policy interventions based on the scale of operations. Applying the policy recommendations designed for most complex systems on the smaller states might prove to be unnecessarily onerous for smaller states.

Hence, we have classified RERAs based on the size of their operations.

- Large RERAs are those which have >1,000 RERA registered projects as of 31<sup>st</sup> December, 2020
- The remaining RERAs are classified as small RERAs

<sup>3</sup>As per the 2011 Census of India.

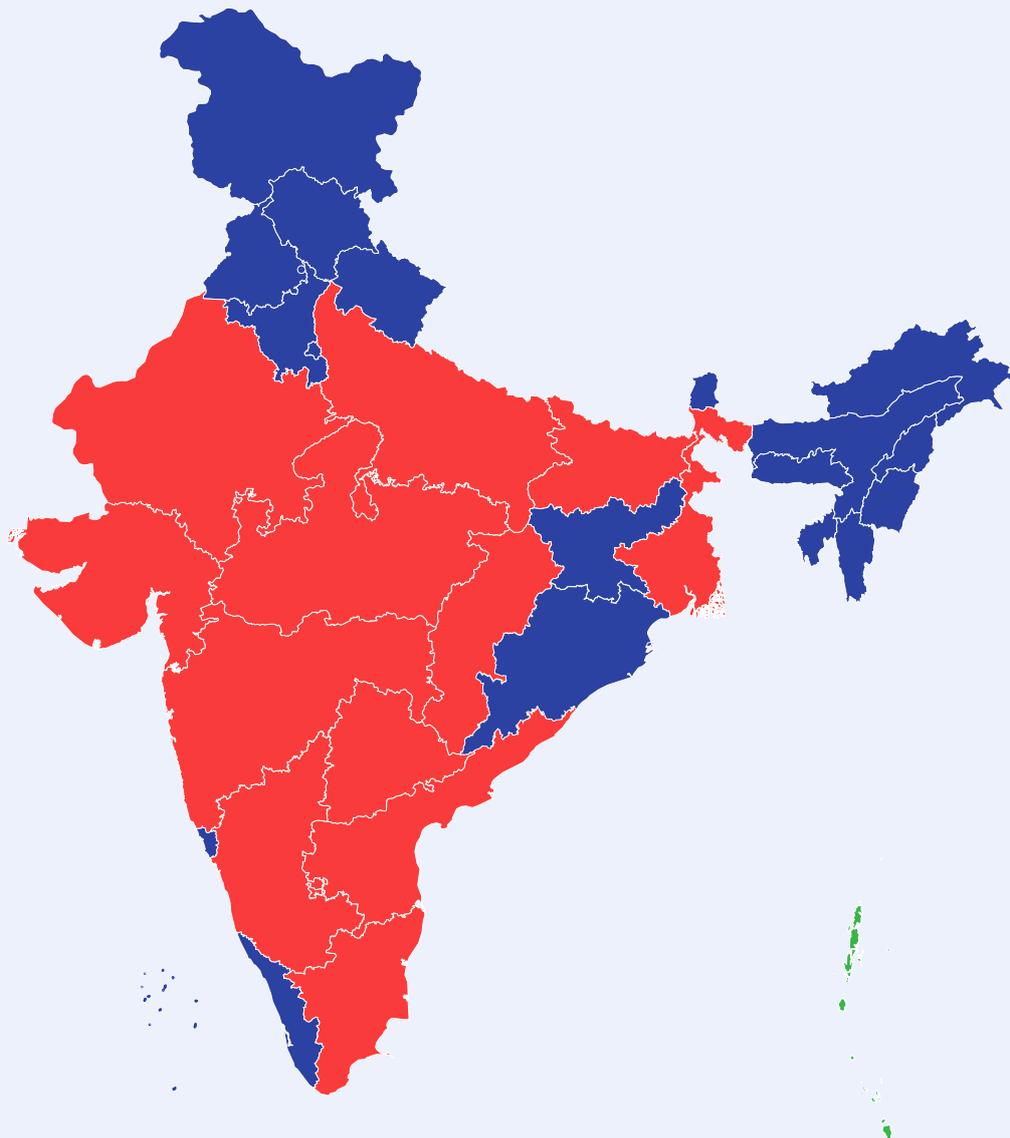
There are a total of 12 large RERAs and 21 small RERAs. As of 31st December 2020, total ~52,000 real estate projects are registered with the RERAs. ~48,000 projects are registered with large RERAs and ~4,000 with small RERAs. This paper presents policy recommendations based on the size of the RERA and further classifies the initiatives in ‘must-haves’ and ‘good-to-haves’ for large and small RERAs.

**Table 1.1**

### List of States and Union territories based on the size of the RERAs

#### Classification of Indian states & UTs

<b>Large</b>	Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra <sup>4</sup> , Rajasthan, Tamil Nadu <sup>5</sup> , Telangana, Uttar Pradesh, West Bengal <sup>6</sup>
<b>Small</b>	Arunachal Pradesh, Assam, Goa, Haryana, Himachal Pradesh, Jharkhand, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Sikkim, Tripura, Uttarakhand, Ladakh, Jammu and Kashmir, Lakshadweep, Chandigarh, Delhi



<sup>4</sup> Dadra & Nagar Haveli and Daman & Diu operate under Maharashtra RERA

<sup>5</sup> Andaman and Nicobar islands operate under Tamil Nadu RERA

<sup>6</sup> West Bengal has notified HIRA (Housing Industry Regulation Authority) and not RERA (Real Estate Regulatory Authority) Act. The projects registered under HIRA are counted for the classification.

## 2 Identification of best practices and functionalities



There are 28 States and 8 UTs in India. RERA Act mandates each state and UT to set up an Authority and notify rules. Each Authority is also expected to create its portal. The portals of different states show a different level of digital maturity. The report outlines our findings from the benchmarking of the portals of different states in this section. The process flows, and navigation across different RERA portals are quite different. This creates an additional hindrance for citizens with properties across states, researchers trying to compare data or create a national-level view of complaints resolution or registration of projects.

Imagine a promoter who has projects across 10 states<sup>7</sup>. The promoter is expected to deal with all the state/municipality level approvals which were required before the RERAs started functioning, but now there is additional regulatory burden to comply with the requirements of different RERAs. We should note that while the rules and forms are primarily similar across states, nuances remain across different RERAs. Over and above, the process flow, log-in credentials and requirements can differ across states leading to the additional workload on promoters.

**There is merit in creating a model document for the RERA portals which all RERAs can reference as they develop their roadmap and adopt different modules over time.** This will lead to an improved experience for citizens, ease of finding, aggregating and comparing data for policymakers, enhance ease of compliance for large promoters and agents with multi-state operations. Another important benefit in implementing the model RERA portal functionality is to act and build on different RERAs' knowledge. Currently, the knowledge of different RERAs rests in silos. A mechanism to transfer best practices, open-data architecture and interoperability of platforms will create a better functional portal for all states. RERA portals designed on the lines of the model RERA platform outlined in this report will incorporate all the next-gen features in their RERA portal apart from saving tax-payers' money in iterating on the requirements of functionalities. While saving cost, it will also reduce the development time and reduce iterations in the portal development leading to further time & cost benefits to the RERAs.

Apart from these benefits, central Government has already planned to develop a common online platform<sup>8</sup> for RERA of all states and UTs to exchange views and share best practices. With interoperability, the central platform can fetch data from web-linkages/APIs from different RERA portals. One of the important requirements for such interoperability is standard data model for the relevant fields which will be captured in the central Government's portal.

This chapter's subsequent sub-sections discuss findings from the stakeholder discussions, benchmarking RERA portals, best practices and guiding principles and overview of the functionalities for a model RERA portal.

## 2.1 Feedback from stakeholders on existing portals

This section captures findings from the discussions with RERAs, stakeholders like promoters and advocates, researchers, buyers of real estate, and other stakeholders like financiers, digital governance experts, etc. The feedback across states differs based on the functionalities of the portals. The report tries to capture the key concerns of different stakeholders applicable across surveyed states.

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<sup>7</sup> Even though promoters with projects across multiple states are fewer in number, but as India grows and economic activity increases, promoters with projects across states are expected to increase in future and initiatives mentioned here are linked to ease of doing business.

<sup>8</sup> Economic Times, 26<sup>th</sup> June 2019

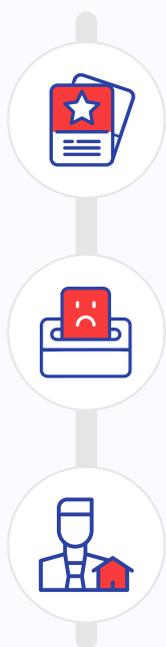
**Table 2.1**

**Pain points of promoters while dealing with RERA portals<sup>9</sup>**

Pain points	Significance
<b>General</b>	
Log-in architecture to support maker/checker process flow (Overall portal functionality)	●
Multiple log-in IDs and different process flow across different RERAs (Complexity across states)	●
Project specific dashboard and unavailability of promoter level consolidated view (Existing portal)	●
Portal breakdowns during weekdays (Server/availability)	●
<b>Registration</b>	
Lack of compartmentalization (sectioning of the form instead of a single long form) in the registration form and no track of flow of application (New portal functionality)	●
Inability to save filled details in the application (Existing portal)	●
Inability to preview entire form before final submission (Existing portal)	●
No explanatory texts for fields in the application forms (difficult for first time users) (Existing portal)	●
Inability to download/preview the uploaded document/image (Existing portal)	●
No provision to indicate which fields are compulsory and which fields are optional (Existing portal)	●
Lack of inline validation of fields, which allows small mistakes in the submissions (Existing portal - data validation)	●
No notification or alert on queries received on the registration form (New portal functionality)	●
<b>Ongoing compliances</b>	
No provision for acknowledgement of submitted compliances and applications (New portal functionality)	●
Lack of pre-filled information for repeated cells or fields (Existing portal)	●
Inability to print receipts for payments made on applications (New portal functionality)	●
Uploading videos in a specified format and within size limit is a cumbersome task (Policy)	●
Lack of reminders or alerts on upcoming submission deadlines for compliances (New portal functionality)	●
<b>Complaints</b>	
Lack of digitization, every document required in-between hearing must be submitted physically (New portal functionality)	●
Lack of single view for all the issued notices by authority and arguments submitted by both the parties (New portal functionality)	●

Low ○ ● ● ● ● High

<sup>9</sup> Source: N = 15 promoter discussions



**Promoter pain points:** Promoters are especially concerned about the log-in architecture allowing them to delegate work within their organization. The maker/checker flow is a standard utility built in well-functioning IT applications. Provision of this functionality will allow them to manage their work entirely on the RERA portal, instead of reviewing the data offline and making final submission on the portal. Also, different sections of the compliance and registration forms might be managed by different department within promoter organizations. E.g., financial performance data will be filled by finance team, operations will fill data pertaining to the project progress, legal team will fill data for the approvals, legal cases, etc.

**Allottees/complaints pain points:** Allottees/complainants are required to use the portal to manage their complaints – filing of complaint/rejoinder, providing additional documentation, submitting written arguments and viewing the interim & final order for their complaint. They were especially concerned about the difficulty in filing the complaints due to lack of proper user manuals, ease of search for the similar complaints to understand outcomes in those cases, difficulty in finding complaints against promoters in their past projects, etc.

**Agents' pain points:** Agents' have to access the portal to register and submit ongoing compliances. Agents were concerned about ongoing compliance requirements being onerous (especially pointed out by agents with sales of fewer properties per annum). The lack of descriptive/video user manuals was another major pain point.

**Table 2.2**

**Pain points of allottees/complainants while dealing with RERA portals<sup>10</sup>**

Pain points	Significance
<b>Overall</b>	
Lack of descriptive/video user manuals for filing complaints	●
No provision for ease of access to registered complaints – search and filter functionality	◐
Lack of provision to find complaints against the same promoter group in past projects	◑
Lack of access to other relevant websites and services like certified copies, etc.	◑
Inability to cross-verify the sales data submitted by the promoters for the properties sold by an agent	◑
No provision to add feedback/review on the projects/promoter	◐
No provision to add multiple complainant names in the complaint form	◐

Low ○ ◐ ◑ ● High

“ Ability file complaints and manage over the 3-4 years of lifecycle is a major challenge. Online portal should have single-view of the entire history.  
-Homebuyer, Haryana

“ Information pertaining to regular compliances are unstructured and difficult to understand/find.  
-Homebuyer, Maharashtra

<sup>10</sup> Source: N = 19 home buyers / complainants

**Table 2.3**

**Pain points of agents while dealing with RERA portals<sup>11</sup>**

Pain points	Significance
<b>General</b>	
Overall requirements to submit QPR and APR are onerous	●
Ease of understanding of user manual/compliance requirements	●
<b>Registration</b>	
Lack of compartmentalization (sectioning of the form instead of a single long form) in the registration form and no track of flow of application	●
No provision to indicate which fields are compulsory and which fields are optional	●
Lack of inline validation of fields, which allows small mistakes in the submissions	●
No explanatory texts for fields (difficult for first time users)	●
<b>Compliances and post-registration services</b>	
Size limit for documents upload is very less	●
Lack of digitalization - No option to upload certifications, needs to physically send the copies	●
No option to intimate about revision in the plan/change in partnership deed	●
No notification or alert on queries received on the registration form	●
Lack of reminders or alerts on upcoming submission deadlines for compliances	●

Low ○ ● ● ● High

## 2.2 Benchmarking RERA portals of different states

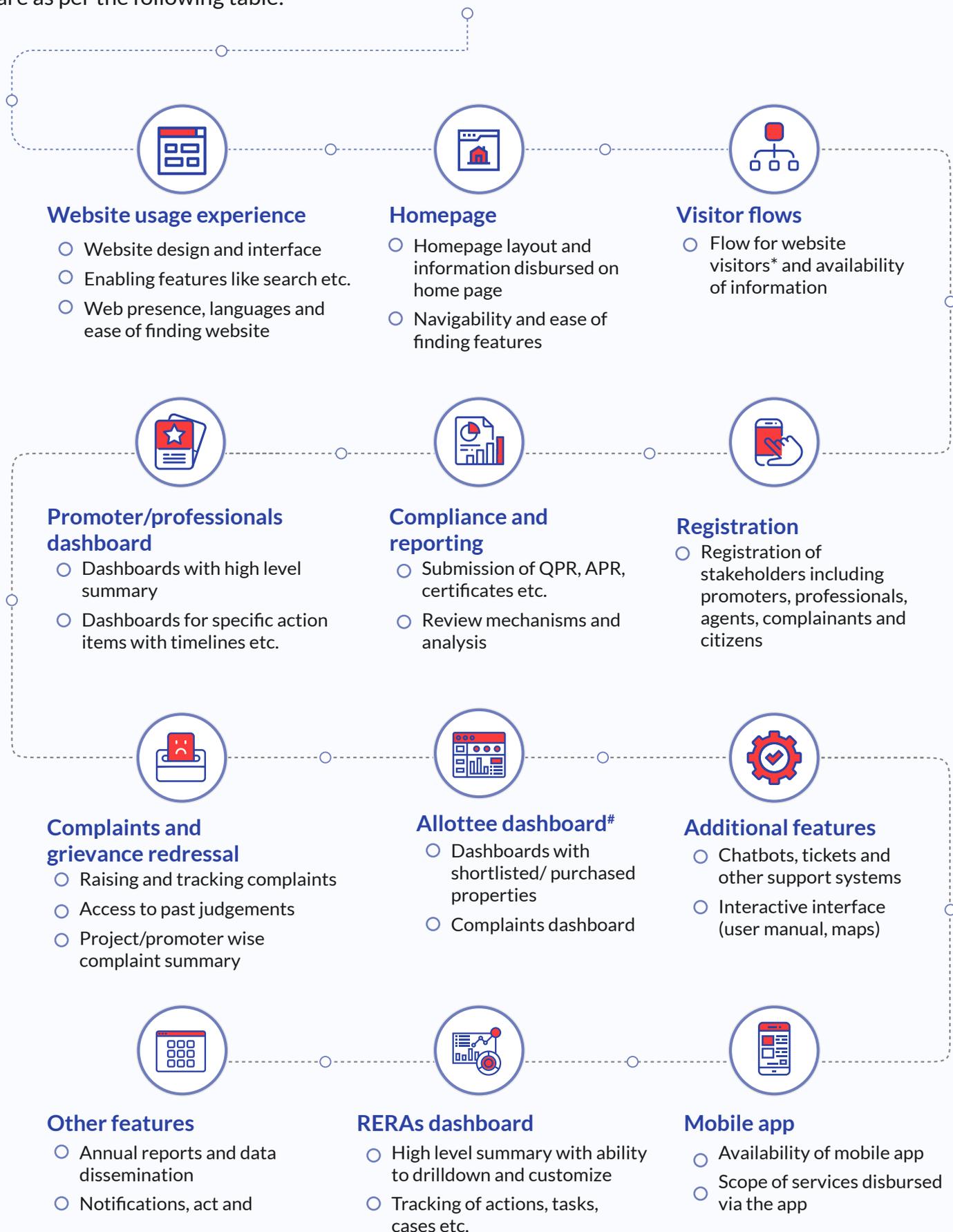
To understand the landscape of the RERA portals, a detailed benchmarking of RERA portals<sup>12</sup> was carried out. The benchmarking was done across 12 major modules in the RERA platforms. Portals of the states of Gujarat, Maharashtra, Madhya Pradesh, Andhra Pradesh, Karnataka, Haryana and Delhi were studied. Two different scales were used to evaluate platforms on different parameters:

- A four-point scale (4 being the highest to 1 being the lowest score) to evaluate the effectiveness/ease of access of features like design of the website, navigation bar design and ease of finding options, conciseness of information, comprehensiveness of project and agent dashboard, etc.
- Certain features (e.g., search option on homepage, presence of user manual, OTP verification in form submission, etc.) were evaluated based on their availability and they were marked as either available or not available

<sup>11</sup> Source: N=10 agent discussions

<sup>12</sup> The benchmarking was done on 12th November 2020. The downtime instances were observed during the week of 9th to 13th November 2020.

The RERA portal has 12 different front-end modules and features (excluding the technical requirements and back-end modules like financial management, admin console, etc.). The modules are as per the following table:



\*website visitor = Visitor is any person who visits the website and interacts without registering as any of the define.

#Allottee dashboard is not present in benchmarked RERA portals except Delhi so it is not benchmarked in this exercise

Source: RERAs web portals, Praxis analysis



## Case study 2.1

### Corporate log-in architecture of Gujarat RERA portal

Gujarat RERA platform has created a more effective and enabling digital environment that removes dependency on offline certifications from project professionals. They have envisioned a process flow and log-in architecture to allow for the registration of Chartered Accountants, Engineers, Company Secretaries, Contractors, Cost Accountants, Engineers and Lawyers.

In the envisioned architecture, relevant professionals (as enumerated above) will be required to be registered before the project is setup on the RERA portal. The professionals will need to provide details/certificates for review by the promoter/further submission to Authority. This reduces the reliance on offline channels, provides better visibility to the promoter and reduces the risk of fraudulent practices.

At the time of writing this report, the portal allows for registration of CAs and the process flow to issue CA certificate on the portal itself. The data can be submitted in a spreadsheet, which not only makes it easier to submit but also allows for further analysis of the data and creation of reports.

## 2.3 Key findings and action items identified from the benchmarking of different RERA portals

Category	Salient features
Evolved features	<ul style="list-style-type: none"> <li>○ <b>RERA portals of the states have evolved over the last few years</b> and currently include features like map-view of projects and dashboards, improved log-in architecture to allow for registration of project professionals, paperless compliances, etc. However, significant differences across states remain. Interoperability can help the states achieve the desired levels of service delivery</li> <li>○ <b>The map view of projects was especially good in the Madhya Pradesh RERA portal.</b> There is a live dashboard based on the filters applied by the user on the page. <b>The users can select whether they want a list view or a map view</b>, thereby allowing for better space utilization on the same page. Learnings can be drawn from other online portals where the view (either in map or list) is available based on the user choice (e.g., real estate discovery portals, hotel/long stay booking portals, etc.)</li> <li>○ <b>Chatbots and helpdesks should be created by large RERAs</b> to resolve queries of users</li> </ul>
Incorporating next-gen features	<ul style="list-style-type: none"> <li>○ <b>As new functionalities are envisaged and new technologies emerge, there will be further scope of improvement for RERA portals in the future.</b> Refining and enhancing the user experience and end-to-end journeys are a continuous journey rather than a one-time exercise</li> </ul>
Log-in architecture	<ul style="list-style-type: none"> <li>○ <b>Log-in architecture of Gujarat RERA portal is best-in-class.</b> It allows for registration of different project professionals like CA, Engineer and Architect. It also provides for integrated workflows, where the relevant professionals submit their certificates digitally and these flow to the promoter who in-turn provides a digital sign-off and submits the final application and compliance reports to the RERAs</li> </ul>

<b>Server availability</b>	<ul style="list-style-type: none"> <li>○ <b>The website downtime should be scheduled on weekends/late nights</b> to complete routine maintenance activities. Instances of downtime during the weekday were observed in certain cases</li> </ul>
<b>Ease of portal discovery</b>	<ul style="list-style-type: none"> <li>○ <b>There is a scope of improvement in search engine optimization</b> for portals in some states, where a simple <b>Google search does not provide the link to the main website on the first page of results</b></li> </ul>
<b>Risk management</b>	<ul style="list-style-type: none"> <li>○ Risk management features like <b>automatic validation of the professional registration number, advanced analytics-based reports on financial performance, cross-checking the project progress and complaint generation across states, cross-checking the financials submitted to MCA, news reports, credit rating changes, drone/satellite mapping of the site, etc.</b> should be incorporated in the RERA portals to improve user experience and risk management</li> </ul>
<b>Ease of research for policy makers</b>	<ul style="list-style-type: none"> <li>○ From policy makers and <b>researchers'</b> point of view, important functionalities to have are the following: interoperability across RERA portals, ability to download data in .csv or .xls formats, save search strings based on the applied filters, notifications/subscriber e-mails to get alerts on their search queries, definition of the fields available for public viewing, standardization of the definitions across RERAs, and audit trail of the data</li> </ul>
<b>Mobile apps</b>	<ul style="list-style-type: none"> <li>○ <b>Mobile apps of the RERAs are still in the initial stage of the digital maturity</b> and will need sustained effort to reach the desired levels of functionality and user experience. Large RERAs should aspire to operationalize their mobile apps with key functionalities for promoters, complainants and respondents to start with and keep building additional functionalities over a period as adoption improves</li> </ul>
<b>ISO certification</b>	<ul style="list-style-type: none"> <li>○ Currently only Maharashtra RERA has ISO certification. Other RERAs should get their processes certified by the ISO to improve standardization</li> </ul>
<b>User-centric additional functionalities</b>	<ul style="list-style-type: none"> <li>○ The homepage should contain navigation guides for users to access the relevant information/links easily. There is a scope of improvement across portals on this aspect, where the relevant links/news/notices/ statistics are not displayed prominently on the homepage</li> <li>○ Allottees should be able to create their profile/account where they can view a customized dashboard and manage their allotment, file and view status on complaints as well as execution petitions. Such functionalities are currently not present across most RERA portals</li> <li>○ The user manuals should be interactive to guide users across the journey. Except Gujarat, we found the user manuals to be very text-heavy limiting its user friendliness. Video guides to fill the forms and explain the type of details required should also be available for users</li> </ul>

**Table 2.4**

### Module-wise best practices across States

Module	Top 3 states	Remarks
Website usage experience	Gujarat, Maharashtra, Madhya Pradesh	Website design and enabling services on website are best in case of MP, Maharashtra and Gujarat

<b>Homepage</b>	Andhra Pradesh, Karnataka, Madhya Pradesh	AP has easy navigation and relevant information on the home page. Also, it has good overall design
<b>Visitors flow</b>	Andhra Pradesh, Gujara, Maharashtra	General information on real estate and ease of access to other information is best on MH and AP
<b>Registration</b>	Andhra Pradesh, Delhi, Gujarat	Gujarat provides well documented and structured user-guides and process flow for registration. Also, it allows registration of project professionals
<b>Compliance and reporting</b>	Gujarat, Karnataka, Maharashtra	Gujarat has a good log-in architecture, has a well-structured process flow for filing compliances, and provides spreadsheets for data filing which enhances ease of compliance
<b>Promoter/professionals dashboard</b>	Gujarat, Karnataka, Maharashtra	Gujarat provides additional information like pending applications, delayed submission alerts, etc.
<b>Complaints and grievance redressals</b>	Andhra Pradesh, Maharashtra, Madhya Pradesh	MH provides better structured form to fill complaint details. Also, it has other unique features like saving application, info tags, etc.
<b>Additional user-friendly features</b>	Andhra Pradesh, Gujarat, Karnataka	Gujarat and AP provide many features like structured user manuals, sitemaps, feedback surveys to enhance user friendliness of website
<b>Mobile app</b>	Gujarat	Only Gujarat has a mobile app among the states benchmarked, also it has better functionality among other RERAs with a mobile app (like UP and Chhattisgarh)
<b>Other features</b>	Gujarat, Karnataka, Maharashtra	Gujarat and MH provide additional functionalities like payment status checker, request certified copies, Apply for RTI, etc.

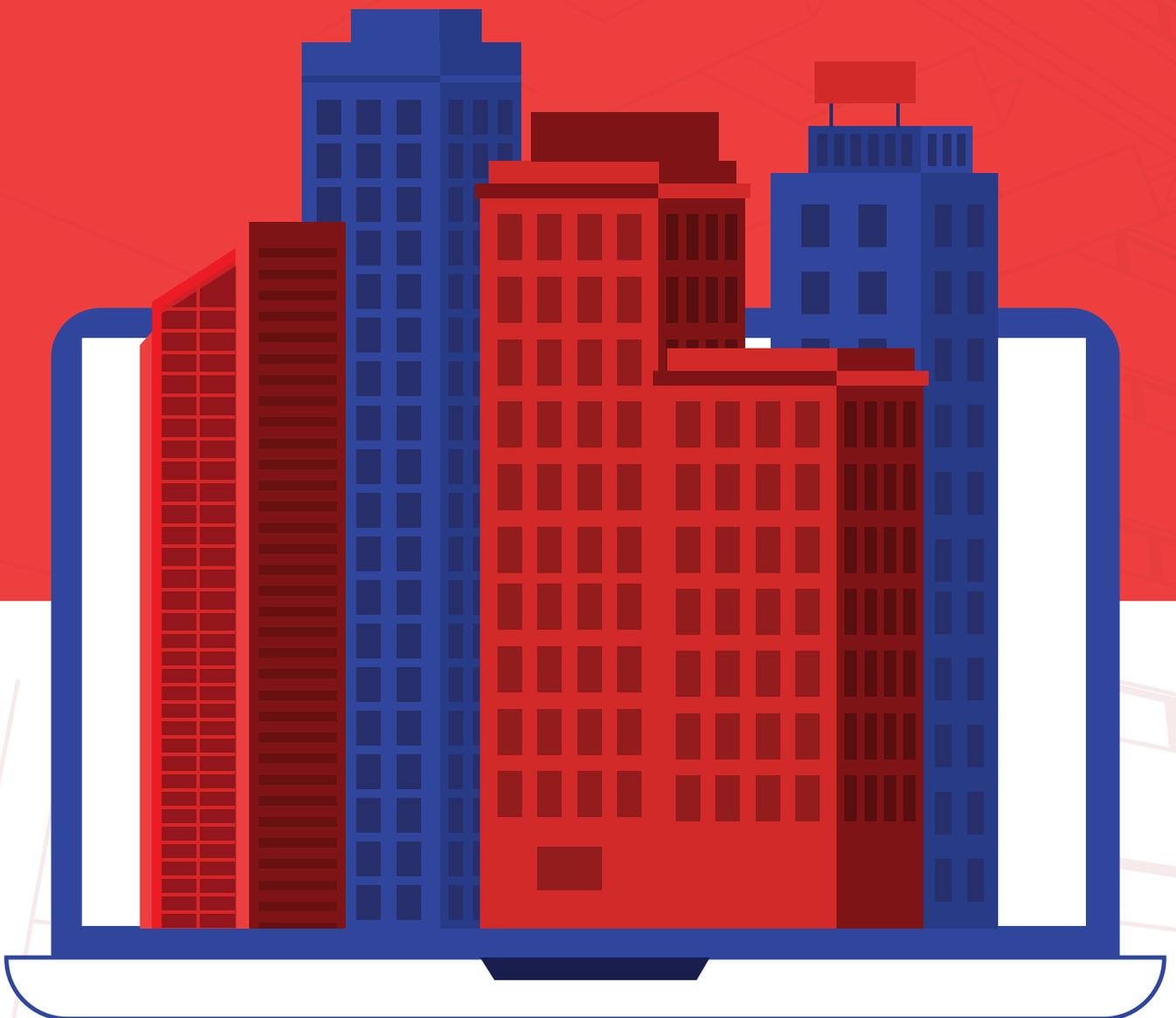
## 2.4 Salient features of a model platform

The model platform should have the following salient features:

Category	Salient features
<b>User-friendliness</b>	<ul style="list-style-type: none"> <li>○ Mechanism to upgrade functionalities and add modules based on the <b>user feedback</b> on regular interval should be provided</li> <li>○ The <b>user interface and dashboards for promoters</b> should allow them to <b>manage work across internal departments as well as across states</b></li> </ul>
<b>Improved digitization</b>	<ul style="list-style-type: none"> <li>○ RERA's operations should be <b>paperless</b></li> <li>○ The <b>portal should conform with Content Management Framework</b> developed by NIC for central and state Government websites. The portals should also get STQC certification from MeITY</li> <li>○ The portal should be <b>GIGW compliant</b>. It should also comply with WCAG 2.1</li> </ul>

<p><b>RERA portal improvement roadmap</b></p>	<ul style="list-style-type: none"> <li>○ <b>Requirements and use-cases for large and small RERAs</b> will be different. Based on the complexity at hand, RERAs will have to adapt the solution for their need. The modular approach followed in this white paper allows for module-by-module implementation</li> <li>○ <b>RERAs should be able</b> to draw on learnings of all the states to minimize the efforts and cost of portal development/upgrade</li> </ul>
<p><b>Risk mitigation</b></p>	<ul style="list-style-type: none"> <li>○ <b>Information</b> sharing on grievances and user feedback, based on interoperability, <b>should allow for additional modules to be built at the central (MoHUA) and state RERA levels to manage risk prudently</b> as well as improve user satisfaction</li> </ul>
<p><b>Scalability</b></p>	<ul style="list-style-type: none"> <li>○ The RERA portals should be <b>interoperable</b>. Interoperable portals will allow for real-time exchange of information between state RERA portals apart from using same log-in credentials and following similar process flows to improve the experience of all stakeholders while reducing time and effort in compliance</li> <li>○ The <b>standardization</b> of data exchange/interoperability should be driven by the <b>central Government</b></li> <li>○ The <b>portal</b> set-up should allow the communities (e.g., start-ups, civil societies, data providers, etc.) to further <b>innovate on top of the RERA platform</b></li> <li>○ <b>System design should be container and micro-service-based</b> architecture like NUIS</li> </ul>
<p><b>Security</b></p>	<ul style="list-style-type: none"> <li>○ Portal should also <b>comply with IT Act 2000</b> (revised in 2008), CERT-In security guidelines, eSAFE guidelines for information security and eGovernance standards of MeitY for metadata, data privacy, and interoperability</li> <li>○ The system should guard against the top risks to portals as published by OWASP (especially OWASP top 10)</li> <li>○ <b>Information security</b> should be ISO 27001 compliant and IT service management should be ISO 20000 compliant</li> </ul>
<p><b>Best practice sharing</b></p>	<ul style="list-style-type: none"> <li>○ <b>Provision to share best practices and learnings</b> (categorized by topics) at regular interval between state RERAs <b>should be provided in the portal</b></li> <li>○ <b>Project documentation</b> should be ISO/MeitY/IEEE/CMMi compliant</li> </ul>

# 3 Designing model RERA portal



The model RERA platform architecture presented in this paper attempts to make it more user-centric and improve risk management for authorities to pre-empt foreseeable risks while incorporating the cutting-edge tools and analytics available in the market. This chapter is divided into four main sub-sections:



RERAs should adopt a phased approach in development/upgrade of their portal. The must-have modules identified for large and small RERAs should be incorporated on priority. Good-to-have modules can be incorporated in subsequent phases while also incorporating user feedback.

### 3.1 Key objectives

The paper attempts to be guided by the following key objectives for the development of the model RERA platform:

- Create a model RERA architecture while outlining key functionalities/modules for large and small RERAs to create a guiding framework for development/upgradation of their individual portals
- Create standard user flows, log-in architecture, data structures to allow data analytics across portals and improve interoperability among RERA portals
- Create an approach for upgradation/development in the scalable, modular manner so individual RERAs can adapt to their requirements as per need and phase in the digital journey
- Improve user-friendliness, and compliance of promoters and agents across states by infusing standardization and interoperability

### 3.2 Key stakeholders

#### Direct stakeholders

- Homeowners (Allottees), prospective homeowners, respondents of complaints
- Promoters and agents
- Real estate professionals like lawyers, architects, engineers, and CAs
- Chairman and members of the RERAs
- RERA legal and appellate adjudication arm
- Administrative staff of RERA

### Indirect stakeholders

- Information portals (e.g., property classifieds, etc.)
- Journalists/researchers
- Financiers (banks, NBFCs, PE, REITs, etc.)
- Central Government authorities (e.g., MoHUA, etc.)
- Sanctioning authorities like Town and Country Planning, Environment clearance, other urban bodies including municipalities
- Tax departments

## 3.3 Overview of requirements & data sources

We propose a two-stage development journey for the RERA portals:

- 01 Phase 1:** Creating/updating the RERA portal to incorporate the relevant modules and operationalize them with increased interoperability as one of the guiding principles
- 02 Phase 2:** Creating a central RERA portal to integrate information from state level portals and allow interoperability for promoters, agents, professionals, and citizens

**In phase 1**, the RERAs should develop a roadmap and incorporate all the must-haves and relevant good-to-have features based on their scale of operations. The portal should be a fully functional system with content management system for static and dynamic content, e-filing and registration system, integrations with other Government departments, deployment of IndiaStack (a combination of tech-enabled digital tools like Aadhar, eKYC, UPI, Digilocker and eSign), notifications and advanced search engine, MIS reporting, advanced analytics, document management system, CRM and back-end admin panel.

**In phase 2**, the development efforts can be led by a central Government authority such as MoHUA to make the portals interoperable and create a central national portal to:

- Increase ease of reporting
- Seamless integration of data
- Standardization of data formats, process flows and log-in credentials
- Increase the effectiveness of risk management practices to enhance the protection of consumer rights

### Key data sources:

The following are the key data sources available for the state RERAs:

- Registration data of all direct stakeholders (like promoters, agents, parties to complaints, project professionals, etc.) of the portal
- Registration of the project
- Quarterly updates and reports by the project promoter
- Notices, queries, and notifications for every property

- Complainants – complaint filing by the complainants and respondent replies
- Interim orders, final orders, and directions in various complaints and cases
- Portals of banks and financial institutions
- Geolocation maps and data
- Relevant legal data from multiple courts and establishments
- Drone mapping/satellite mapping of project sites
- Relevant Government departments (e.g., property registration, income tax, GST, TCP, municipalities, environment, airport authorities, etc.)
- Relevant third-party data through available web services or in the public (e.g., credit rating, sales, and availability data on real estate classifieds portal, etc.)
- Social Media platforms for related news

Once the interoperability of portals is achieved, the following additional sources will be available:

- Registration data of projects across states
- Complaints related data – complaint details, respondent replies, interim and final orders, execution petitions and their resolutions
- Project and promoter scoring across states

### 3.4 Key requirements of the model RERA portal

The requirements cover three major groups of functionalities/modules for the RERA portals based on the size of the RERAs. The functionalities are also bucketed based on the must-have and good-to-have features. The modules are further classified based on the nature of the modules - Front-end and back-end modules.

- 01** **The building blocks for the RERA portal form the first group of modules.** These are must-have modules for all RERAs. They fulfil the basic requirement of a RERA portal.
- 02** **Over and above the must-have modules for all RERAs,** there are a set of functionalities that are must-haves for large RERAs due to complexity of projects, vast scope and its effects on the business environment in real estate sector in the state. These functionalities are optional (good-to-have) for small RERAs at the outset. As digital maturity improves, small RERAs should aspire to incorporate these functionalities.
- 03** **There are some good-to-have modules across large and smaller RERAs to further enhance the citizen-centricity of the portal by improving usability,** better risk management for RERAs by grading promoters and projects, improve effectiveness of decision making for RERAs based on advanced analytics, automate process flows and eventually enable creation of an India Real Estate ID. The India Real Estate ID envisions to improve transparency and create additional use cases based on Aadhaar-like unique geo-referenced ID system for the real estate sector in India.

Exhibit 3.1



Overview of modules for the RERA portal

**Must-have for all RERAs**

Large as well as small RERAs

**Must-have large RERAs**

Good-to-have for small RERAs

**Good-to-have for all RERAs**

Large as well as small RERAs

**Basic building block for the RERA portals**

**Additional building blocks for the large RERAs; good-to-have modules for small RERAs**

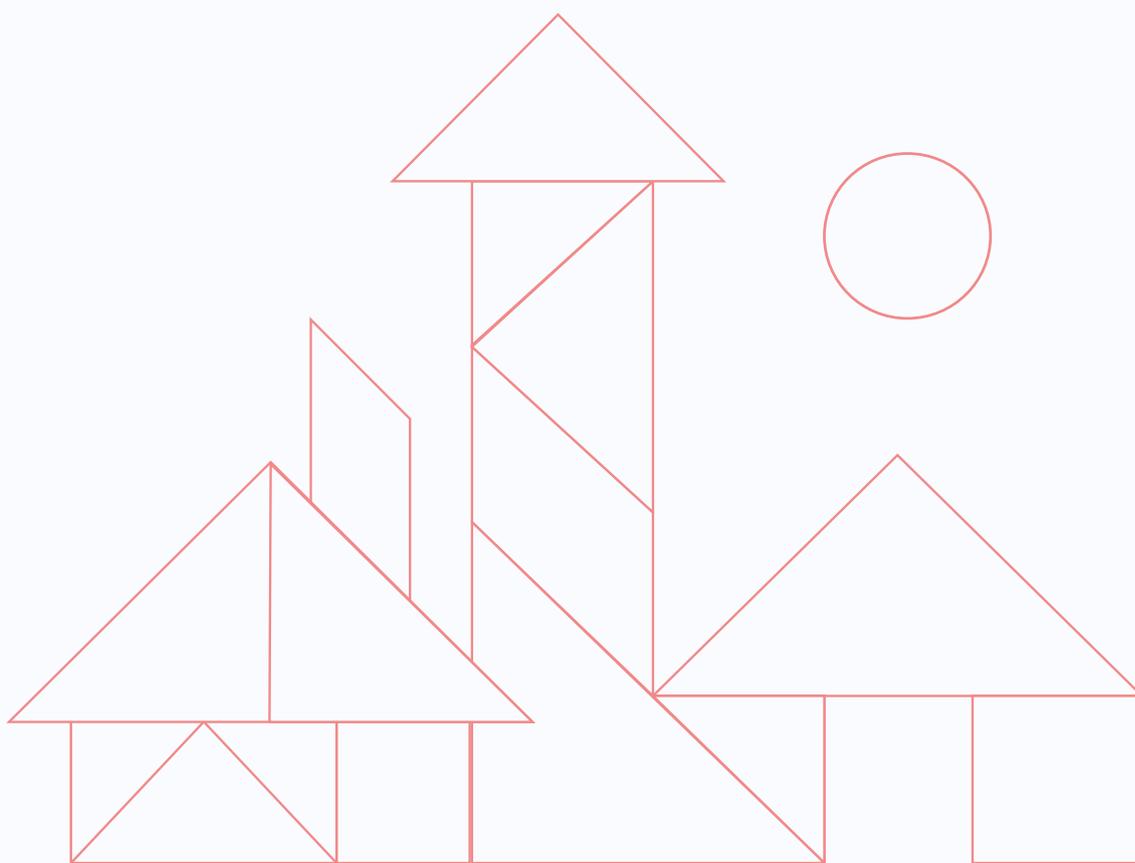
**Next-gen features and additional use cases powered by the RERA portal; good-to-have for all RERAs**

**Front-end modules**

- Functional homepage with easy navigation
- Registration of projects and agents
- Ongoing compliances for projects and agents
- Complaints and grievance redressal
- Dashboards for RERAs to manage applications
- Information availability for citizens to access registration and periodic progress reports
- Intuitive forms with sectional view and ability to save as draft, download progress and autosave feature
- Detailed user manuals with screenshots of the actual application to explain process flows including video guides
- Additional citizen convenience functionalities like map view of projects and project dashboard, buyer review of projects and promoters, etc.
- Bulk download and audited trail of project and complaints data for researchers' assistance
- Multilingual content availability
- Fully functional mobile app
- Dashboards for promoters with single view to manage all the projects under the promoter
- Dashboard for allottees with status of the housing project, allotted unit and all interactions with RERA
- Next-gen dashboard with data analytics and BI, and reports for RERAs to manage workflows, risk and gain insights
- Registration of project professionals, workflows and dashboards
- Interoperability with other government departments like property registration dept, land records, environment clearances, courts database, etc.
- Pre-registration facilitation by providing a single window
- India Real Estate ID: Allocating a geo-referenced ID to each property and creating an India Real Estate ID repository to empower different identity backed use cases
- Accessibility tools: Multilingual dynamic and static pages, screen reader access tools

## Back-end modules

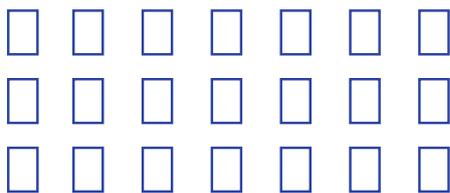
- Linkages with relevant web-services like ICAI, GIS, MCA, digital signature validation, data validation and masking
- Validation APIs to check pin codes, KYC document, project progress from drone images, spreadsheet submissions
- Payment/refund management system
- Alert/notification system for all the stakeholders
- Corporate log-in architecture to allow maker/checker workflows for promoter companies
- Automated notice generation for defaulters
- Promoter and project grading system
- Helpdesk and ticket issue system
- Advanced predictive analytics to predict performance/delays (e.g., geospatial mapping to compare actual vs reported progress, AI algorithm to predict delays based on GST return of purchases, financial data analysis, past legal cases, other publicly available data)
- Automatic recognition of images/text in images (based on OCR and AI) and trigger for fraudulent practices
- Risk management by sourcing relevant information from past performance, news outlets, rating agencies, social media, etc.
- API functionality for banks to download data, submit project repayment behavior



## Concept note on India Real Estate ID

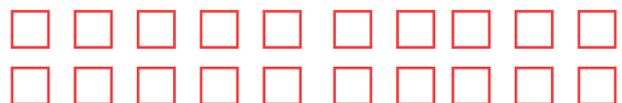
**India Real Estate ID is envisaged as the unique repository of real estate properties (residential + commercial) in India, with a unique geo-referenced property identification number for each property. It is envisioned as a model architecture to allot unique geo-coded ID at the pan-India level.**

The ID allotment can be first piloted by state RERAs for newly sold properties. The ID allotment module can be integrated in the RERA portals for automatic ID allotment. Once the pilot is successful, the program can be expanded to cover all the residential and commercial real estate properties (including legacy properties). The ID allotment will create an Aadhaar-like repository for real estate properties. The ownership of properties can be mapped based on the PAN/GSTIN/Aadhaar of the owner.



### A host of different use cases can be powered by the Real Estate ID:

- Common index number to manage subsidies/other Government schemes
- Valuation of properties (especially relevant for the inherited properties) for deciding stamp duty, etc.
- Digitize land records, with resale of properties being complete when the India Real Estate ID is fully functional
- Creation of security/mortgage in favor of lenders in the national repository based on a consent framework
- Plugging revenue leakages for the Government bodies
- Integrated view of promoter performance at pan-India level
- Stamp duty and TDS in single transaction for transfer of properties
- Additional analytics and custom reports for the central Government/other researchers
- Ease of access of information to researchers/businesses
- Accurate geo-tagging of addresses leading to better accuracy of maps and addresses helping logistics/last-mile delivery sectors, mobility players, advertisers, financiers, etc.)





# 4 Front-end modules of the RERA portal



Front-end modules have a direct interface with the stakeholders (allottees, promoters, agents, RERAs and others). These modules include homepage, registration forms, ongoing compliance, complaint resolution, mobile application, etc., apart from functionalities to enhance the ease of use and compliance. This chapter outlines the key requirements of the front-end modules to make it user-centric.

**Table 4.1**

### Module-wise functionalities

Module	Key Requirements
Functional homepage	<ol style="list-style-type: none"> <li>① Intuitive navigation bar</li> <li>② <b>Map view to see the inventory of real estate projects</b></li> <li>③ Availability of information in English and a relevant regional language</li> <li>④ Direct links to key functionalities like project registration, complaint registration, etc.</li> <li>⑤ Quick access to relevant statistics</li> <li>⑥ Alerts for updates or new changes in RERA portal</li> </ol>
Key functionalities of form/applications	<ol style="list-style-type: none"> <li>① <b>Bulk/batch upload facility through spreadsheets</b></li> <li>② Sectional views and grouping of relevant fields</li> <li>③ <b>Ability to save partially filled application</b></li> <li>④ Ability to download and preview filled information</li> <li>⑤ Pre-fill information in repetitive fields</li> <li>⑥ <b>Inline validation of fields like calculated values, type of input, registration numbers, etc.</b></li> </ol>
Project and agent registration	<ol style="list-style-type: none"> <li>① Different forms for individual/non-individual promoters (Company/Firms/Association of people/others)</li> <li>② <b>Geotagging of projects to view their location on a map</b></li> <li>③ Adding bulk information through pre-designed spreadsheet templates like inventory and infrastructure details</li> <li>④ Ability for promoters to communicate with RERAs on observations/comments on registration application</li> <li>⑤ Tracking facility for registration applications with message alerts for new updates on the application</li> </ol>
Ongoing compliances – Project and agent	<ol style="list-style-type: none"> <li>① <b>Color-coded dashboard to enable tracking of past and upcoming submissions of periodic compliances</b></li> <li>② Provision of different QPR and APR forms for completed, ongoing and plotted (no construction work) projects</li> <li>③ Alerts for periodic reminders of upcoming and missed deadlines on registered mobile/email</li> <li>④ Provision for approval of compliance reports from authority before releasing in public domain</li> </ol>

<p>Complaints and grievance redressals</p>	<ol style="list-style-type: none"> <li>① Login architecture and workflows for both complainant and respondents to handle e-submissions</li> <li>② <b>Provision for e-submissions of additional documents and written arguments pertaining to the complaint</b></li> <li>③ Option to add multiple stakeholders as complainants and respondents</li> <li>④ Provision to apply for execution petitions against complaints for which order is not complied</li> <li>⑤ Option to withdraw complaint</li> </ol>
<p>Promoter management dashboard</p>	<ol style="list-style-type: none"> <li>① Single view of all the projects for a promoter</li> <li>② <b>Quick access to tools for project lifecycle management, e.g., option to track updates/notifications, apply for extension application, progress reporting, consolidated view of ongoing complaints, etc.</b></li> <li>③ Calendar view of upcoming deadlines for different applications, next hearing dates for complaints on project, and other relevant dates</li> <li>④ Management of interactions with allottee/prospective buyers like option to link allottee to an inventory unit, tracking payments for booking, etc.</li> <li>⑤ Management of complaints</li> </ol>
<p>Allottee dashboard</p>	<ol style="list-style-type: none"> <li>① Manage purchase request for a project unit and track payment status for booking</li> <li>② Updates on project progress for construction status of project and infrastructure</li> </ol>
<p>Complaint and execution petition management dashboard (complainant and respondent)</p>	<ol style="list-style-type: none"> <li>① Access to different actions available to complainant and respondents like submit rejoinder against reply, respondent reply, submit written arguments or additional documents, etc.</li> <li>② Record of all the submissions made and received from the respondent/complainant along with</li> <li>③ Record of interim orders issued by the authority</li> </ol>
<p>Public search: Registered projects/ agents, Complaints filed/execution petitions, Judgements</p>	<ol style="list-style-type: none"> <li>① <b>Advanced free text search functionality along with additional filters like associated tags, date range, etc.</b></li> <li>② Ability to download excel and PDFs of selective records based on applied filters and sort order</li> <li>③ <b>Bulk download functionality</b></li> </ol>
<p>Public view of Registered projects</p>	<ol style="list-style-type: none"> <li>① Ability to view latest updated information on projects along with provision to view information from submissions at the time of registration</li> <li>② <b>Access to other similar projects using ML based clustering of projects similar in terms of project type, location, cost, and other key parameters</b></li> <li>③ Bulk download functionality to enable download of all information on project including documents, images, etc. on single click</li> <li>④ <b>GIS spatial layer to view project boundaries on map</b></li> <li>⑤ Information on key stats related to sales/booking data for different project inventories</li> </ol>

	<ul style="list-style-type: none"> <li>⑥ Access to progress reports and consolidated list of complaints/execution petitions on the project</li> <li>⑦ <b>Ability to add rating/review on projects and option for promoter to respond to the reviews</b></li> </ul>
Mobile application	<ul style="list-style-type: none"> <li>① <b>Location based sorting of information, example – Registered projects, complaints, etc. for the tracked district on top of the list</b></li> <li>② Provision to report non-registered projects and add photos with geotagging of the location of photos</li> <li>③ Quick check on details of registered RERA number</li> <li>④ Availability of list of registered projects, agents, complaints, etc. along with advance search functionality</li> <li>⑤ Different login architectures for citizens, professionals, promoters, etc</li> <li>⑥ Helpdesk to raise support ticket for technical glitches</li> </ul>
Bulk download	<ul style="list-style-type: none"> <li>① Batch download of all the PDFs and media files associated to projects and complaints</li> <li>② Clustering of relevant file and folders for download</li> </ul>
Corporate login architecture	<ul style="list-style-type: none"> <li>① Login for different level at promoter company</li> <li>② <b>Ability for maker and checker architecture in lifecycle management and ongoing compliances for projects</b></li> </ul>
RERAs dashboards	<ul style="list-style-type: none"> <li>① <b>Dashboards with data analytics and BI tools for efficient management of applications and projects</b></li> <li>② Color-coded dashboards with stats and status of applications and registered projects, complaints, agents, and other miscellaneous requests</li> <li>③ ML based automated flagging of projects with signs of distress in terms of financial progress, compliance reporting, incomplete construction, etc.</li> <li>④ Alerts on missed TATs for registration applications</li> <li>⑤ <b>Provision for tagging and categorizing of projects, complaints, and agents to ease the search of relevant information</b></li> <li>⑥ <b>Analytical reports to give early signs of distress in financial or construction progress of projects</b></li> </ul>
Registration architecture for professionals, citizens and allottees	<ul style="list-style-type: none"> <li>① Registration of professionals like Architect, CA, Engineer. Provision for professional certification on the portal</li> <li>② Registration of allottees and key citizen groups (researchers who can save their key search queries, get notifications for updates, etc.)</li> </ul>
Pre-registration facilitation	<ul style="list-style-type: none"> <li>① <b>Single window for pre-registration facilitation for project registration with different Government departments</b></li> <li>② Interoperable log-in credentials</li> </ul>

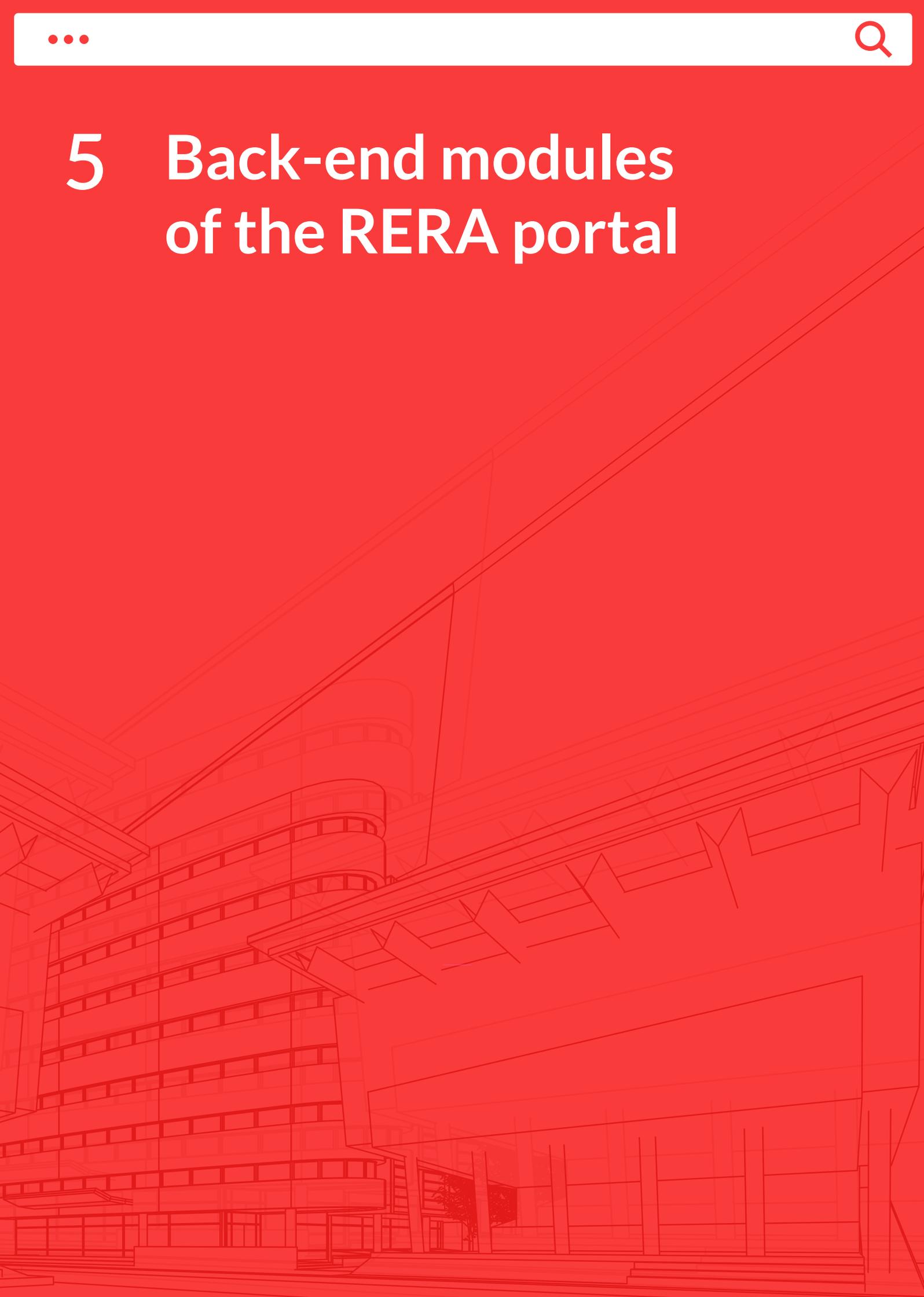
Interoperability with other Government departments	<ol style="list-style-type: none"> <li>① Interoperability with other Government departments like property registration dept, land records, environment clearances, courts database, etc.</li> </ol>
Indian Real Estate ID	<ol style="list-style-type: none"> <li>① Unique geo-referenced ID for each property to create an India level database of all properties</li> <li>② Provision to allot IDs to non-RERA registered properties</li> </ol>
Accessibility tools	<ol style="list-style-type: none"> <li>① Multi-lingual dynamic and static pages</li> <li>② Screen reader access tools</li> </ol>
Intuitive and user-friendly user manuals	<ol style="list-style-type: none"> <li>① Intuitive user manuals with screenshots of the actual portal</li> <li>② Video guides to explain the process flow</li> <li>③ Clarifications for key fields and availability of filled form to clarify doubts</li> </ol>
Helpdesk and ticketing system	<ol style="list-style-type: none"> <li>① Helpdesk to manage queries from promoters, allottees, other citizens, etc.</li> </ol>
Additional user convenience functionalities	<ol style="list-style-type: none"> <li>① Public view of projects with location, promoter details, compliance reports, project photos, etc.</li> <li>② Map view of the projects</li> <li>③ Buyer review of projects</li> </ol>

### Overall front-end technical requirements:

- Standard open-source **Content Management System (CMS)** that is customizable, expandable, and multilingual to update dynamic and static content on the web portal
- **Secure user registration, login, and profile management system for portal users**
- For registered and unregistered users, integration of the **e-filing management system** on the web portal to allow e-filings for various kinds such as registrations, ongoing compliances, post-registration requests, complaints and execution petition as required under the act by multiple stakeholders, as per the forms along with provision to provide digital signature
- **Provide maker/checker flow**, internal checking and smart suggestions (based on ML) to submit forms
- **Dashboards for users** (promoter, complainant, project professionals, respondents, etc.) to manage, extend, renew, track status, or communicate with authority for registered e-filings as applicable
- **Advanced search functionality** to access and display all projects, various RERA rulings/orders, project/promoter score and public reviews, etc.
- **Provide map view** of all the projects along with key statistics like project location, project type, numbers of units, available unit, etc.
- **Option for Authorities to tag the complaints and projects** as per relevant classification



# 5 Back-end modules of the RERA portal



Back-end modules are modules that power the other Front-end functionalities. These modules include automated alerts and notices, risk management, analytics, helpdesk management, promoter and project grading system, payment and refund management system, API integrations, etc. This chapter outlines the key requirements of the back-end modules to empower different use cases and enhance usefulness of Front-end modules. The chapter also outlines overall technical back-end requirements.

**Table 5.1**

### Module-wise functionalities for back-end modules

Module	Key Requirements
Automated alerts and notices	<ol style="list-style-type: none"> <li>① <b>Automated periodic alerts and notices for managing ongoing compliances in case of agents and projects</b></li> <li>② System generated alerts on observations, approvals, payments, and submissions in case of different registrations and complaints</li> <li>③ Ability to subscribe and unsubscribe alerts on all communication mediums like email and SMS</li> </ol>
Risk management	<ol style="list-style-type: none"> <li>① Source information from different channels/agency including social media to create user personas for promoters, agents, complainants, and respondents</li> <li>② Analyse past performance data for promoters to generate a performance rating for a project</li> <li>③ <b>AI/ML led models to improve risk management and predict defaults of promoters</b></li> </ol>
Advanced analytics	<ol style="list-style-type: none"> <li>① Predicting and flagging of projects to track improper fund utilization, project delays, overdue compliance reports, etc.</li> <li>② <b>Geospatial mapping and project monitoring based on drone/satellite imaging</b></li> <li>③ <b>Data from other sources like GST returns, MCA reports and credit reports to predict promoter performance</b></li> </ol>
Promoter and project grading system	<ol style="list-style-type: none"> <li>① Promoter/project grading system based on the performance parameters like experience, financial stability, complaints, credit rating, scale of operations, etc.</li> </ol>
Payment and refund management system	<ol style="list-style-type: none"> <li>① Payment reconciliation system</li> <li>② Ability to record offline payments for applications in case of payment failures</li> <li>③ Fee calculator system for different form/applications</li> <li>④ Notice and one-time payment request mechanism</li> <li>⑤ Refund management system</li> </ol>
Automatic text recognition from images and PDFs	<ol style="list-style-type: none"> <li>① <b>Automated validation of uploaded documents using OCR technology to scan files and alerts in case of fraudulent certificates and blank documents upload</b></li> </ol>

<b>Audit trail of data</b>	<ol style="list-style-type: none"> <li>① Detailed recording of changes and submissions related to complaints and projects</li> <li>② Record and log of approvals of all applications/requests by different authority personals</li> </ol>
<b>API integration and linkage with external web-services</b>	<ol style="list-style-type: none"> <li>① Validation of documents and certificates</li> <li>② <b>Validation of PAN number, Aadhaar number, CA License number and other Government IDs</b></li> </ol>
<b>API for banks</b>	<ol style="list-style-type: none"> <li>① <b>API functionality for banks to download data, submit project repayment behavior</b></li> </ol>
<b>Helpdesk and ticket issue system</b>	<ol style="list-style-type: none"> <li>① Automated ticket number issue system for handling collective requests from portal and mobile apps</li> <li>② Categorization of tickets based on type of request</li> <li>③ Repository of all the received request and feedbacks</li> </ol>

### Overall technical back-end requirements:

- **Open-source feature-rich form builder**
- **In-built API functionality** in the form to allow interoperability with internal and external systems
- The back-end admin unit to **facilitate the processing of received requests/registrations /filings/extensions, complaints and execution petitions** using a digital workflow system
- **Digital workflow system to concern as per the assigned roles and responsibilities**, a delegation of power, business rules, and communication for processing within the stipulated time frame
- **Automated notices, notifications, and alert mechanism** for all (internal and external) stakeholders
- **Online payments/refund processing** and reconciliation system
- **Integration with standard open-source CRM system** to centralize and track various activities of all types of users
- **Multiple digital delivery channels** (mail, notification on apps, SMS and notification on the dashboard) for system driven notifications and alerts to the concerned parties like notices, non-compliances, complaints, reminders, status, and more with a copy of the record in e-file for future reference
- **Feedback and suggestion management system** to enable record creation, tracking, actioning, closing communication, and building a repository of all feedbacks and suggestions with responses for future reference
- **Complaints and execution petition management system** including tracking and ticket disposal system, filing, scheduling hearing, notice issuance, enabling filing of documentations, issuance of interim orders/judgment, closure of complaints, publishing of judgment and issuance of automated challan for exclusive penalty
- Open-source **document management systems** to create, sign, manage, approve, tag and search various kinds of documents across system including E-Court, Registration and more
- **Reporting and MIS layer to create multiple reports for Authority** to analyze performance of stakeholders and manage internal workings
- **Validation servers and APIs** to check project images, spreadsheet uploads of data, identification of content of the document using AI and OCR, and validating geotag
- **Integration/data exchange systems** through web services for visualization, data validation using internal and external APIs



# 6 Sharing best practices



## 6.1 Training and documentation

Standardization of training and documentation is an essential step in the evolution of the portal and helps create institutional memory to enable and expedite future development and acts as reference material for the Authority and the web developers.

Training for the staff of the RERAs should be conducted for the full portal. The recorded material from the trainings should be made available to the Authority for future reference. Trainings should include workshops, user acceptance testing, etc. It should be done in the development environment before go-live.

The documentation should follow IEEE/Meity/ISO standards. Key requirements of the system release should include the following:

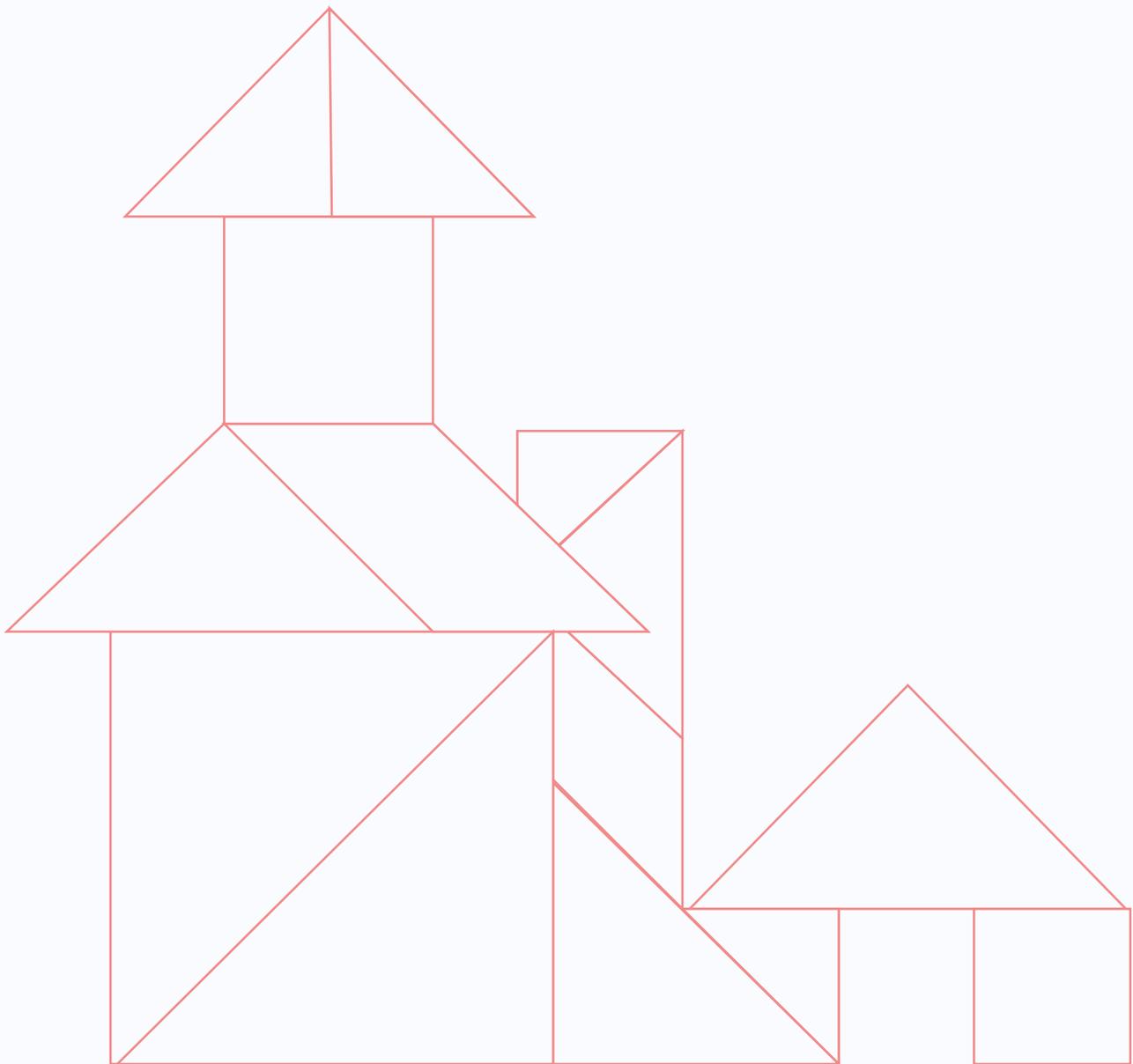
- Software and licence requirements
- Hardware requirements as per the load matrix
- System Requirement Specification (SRS) document containing detailed requirement capture and analysis including Functional Requirement Specification (FRS), Interface Specifications, and application security requirements
- Configuration management plan:
  - Release management plan, code version branching strategies for deployment in various environment, tooling information used for configuration management and build deployment
  - Rollback procedure
- User manual for the operation and maintenance of the platform (including hardware and software)
- Original Security Audit report and Clearance Certificate
- Training Manuals and literature which will include all details pertaining System Administration, CMS Tool, Website Users, Installation, Operations, Maintenance and Security policy and procedure for website including Password security, logical access security, operating system security, data classification, and application security and data backups
- Deployment Architecture Document
- Test Plans and Test cases (including Unit Test Plan, System/Integration Test Plan, User Acceptance Test Plan)
- Data models descriptions
- Sample reports/dashboards
- FAQ guides, toolkit guides and troubleshooting guides
- Security features
- Details of open-source software used
- Migration guidelines
- Research documents about the schemes and the datasets integrated into the Dashboard

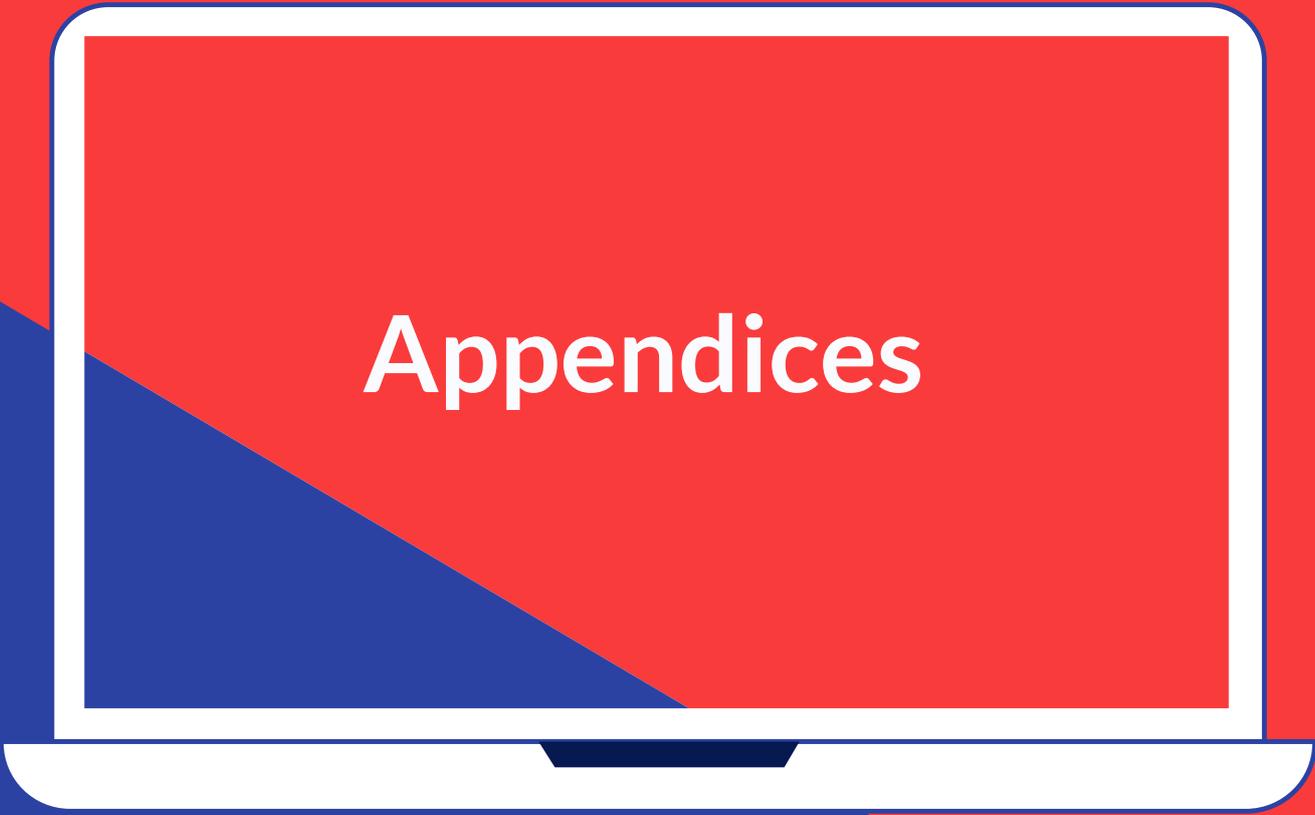
## 6.2 Sharing best practices between RERAs

Knowledge should be available in the codified formats (SOPs, case studies, best practices, etc.); this will enable the RERAs to learn from each other and improve 'go-to-market' time for new functionalities and features, especially in the areas of governance and protecting buyers' interests.

Key topics for knowledge dissemination include:

- RERAs judgements
- Best practices in risk management
- Complaints and execution petition management
- Digital/operational initiatives taken by different RERAs and their impact
- Citizen awareness campaigns
- Case studies of disputes and key learnings therefrom





# Appendices

## Appendix 1: Detailed benchmarking of portals

This sub-section outlines detailed benchmarking of different portals. We have benchmarked the following modules:

Key parameters

Homepage

Visitor flows

Registration

Compliance and reporting

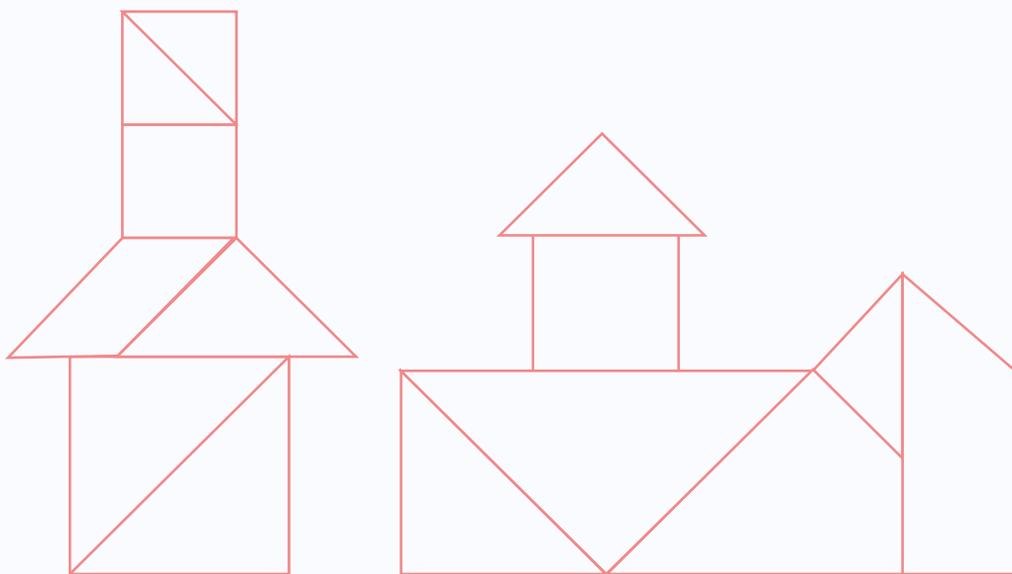
Promoter/professional dashboards

Complaints and grievance redressal

Additional user-friendly features

Mobile app

Other features



**Table 1** Key parameters

	Key parameters	Requirement across RERA portals based on size		Top states	Comments
		Must have Small <sup>13</sup>	Must have Large		
<b>Web presence</b>	SEO/ease of finding website	✓	✓	• Gujarat, Maharashtra, Haryana	• These 3 states' RERA portals are easy to locate
<b>Design</b>	Design of website (look and feel)	✓	✓	• Gujarat, Maharashtra, MP	• Gujarat, MH and MP have good UI/UX
	Ease of access of the website on mobile	✓	✓	• Gujarat, MP and Karnataka	• Gujarat and MP website interface is very smooth on mobile phones
<b>Enabling service</b>	English language	✓	✓	• Available across all RERA portals	• The base language of website is English on all RERAs
	Regional/Hindi language support	✓	✓	• MH, MP and Karnataka	• Karnataka, MH and MP provide access in regional languages
	Accessibility for visually impaired users		✓	• AP, MP	• Compliance with Web Content Accessibility Guidelines (WCAG) 2.0 level AA which enables third-party tools to help visually impaired users access the website
	Ability to change font size		✓	• Gujarat, Maharashtra, Karnataka, MP and Delhi	• Available except AP and Haryana
<b>Reliability</b>	Reliable uptime/less breakdowns	✓	✓	• MP, Maharashtra and Haryana	• User feedback indicates downtime issues in GujRERA portal
	View projects on map	✓	✓	• Gujarat, MP and AP	• MP dashboard is next-gen
<b>Other services</b>	Comprehensive filters to view projects on maps		✓	• Gujarat and MP	• MP dashboard filters like Promoter, district, project name, completion certificate status, type & nature of project is next-gen

<sup>13</sup> Must have – Small indicates the features which are must have for small RERA portals. Must have – Large indicates the features which are must have for large RERAs. The features which are not marked as must-haves for all RERAs are good-to-have features for the small RERAs. This definition of features is applicable to all the modules which are benchmarked..

**Table 2** Homepage

	Homepage	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
<b>Design</b>	Look and feel of homepage	✓	✓	• Madhya Pradesh, Gujarat and Maharashtra	• Pleasant colors, good contrast and good user interface in MP RERA portal
	Homepage statistics dashboard		✓	• AP, MP and Gujarat	• Dashboard in the form of a line graph on AP RERA website
	Menu design and ease of discovering options	✓	✓	• Gujarat, MP, AP and Maharashtra	• Easy to navigate most portals
	Sliding highlight images	✓	✓	• AP, MP, Delhi and Maharashtra	• Highlight images provide information at a glance
	Usefulness of sliding highlight images	✓	✓	• Maharashtra	• MH RERA portal images showcase relevant data; visuals are better in MP RERA
<b>Access</b>	Search option on homepage to search website	✓	✓	• Gujarat, AP, MP and Delhi	• Easy to search the MP RERA; AP and Gujarat only provide the functionality to search projects
	Ease of login/registration for stakeholders	✓	✓	• Easy across all RERA portals	• Varied process flow across RERAs
	Provision of 'skip to the top' button		✓	• Maharashtra and AP	• Only available in MH and AP RERA portals
	Conciseness of information on homepage	✓	✓	• Gujarat, MP, Haryana	• Haryana & Guj RERA captures information in a concise manner (no addl. description of law, extra text which is not be useful on the home page)
	Section/slider of What's new/notices	✓	✓	• Available across all RERA portals	• Available across most RERAs
	Availability of relevant website links		✓	• Maharashtra and AP	• Available in MH and AP RERA only
	Overview of registered projects	✓	✓	• Available across states	• Available across most RERAs. Scope of improvement in Delhi and Haryana to improve ease of access of the data
	Ease of access to key regulatory documents on homepage	✓	✓	• Available across all RERA portals	• Easy to find across portals

**Table 3** Visitor flows

	Visitor flows	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
<b>Annotation</b>	Annotations for major updates and changes by the state RERA		✓	<ul style="list-style-type: none"> <li>Gujarat, Maharashtra, Karnataka and AP</li> </ul>	<ul style="list-style-type: none"> <li>Gujarat RERA provides annotations with relevant updates to visitors</li> </ul>
<b>Services</b>	Availability of detailed information about state RERA (About us)	✓	✓	<ul style="list-style-type: none"> <li>AP, Maharashtra, Delhi and Gujarat</li> </ul>	<ul style="list-style-type: none"> <li>Maharashtra and AP provides structured links in About-us section to build a better understanding of their work</li> </ul>
	Ease of access to downloads sections for user-manuals, annual reports, rules and regulations	✓	✓	<ul style="list-style-type: none"> <li>Maharashtra, Gujarat and Delhi</li> </ul>	<ul style="list-style-type: none"> <li>Maharashtra provides a dedicated downloads section with files categorized</li> </ul>
	Availability of services to check status on submitted applications or payments	✓	✓	<ul style="list-style-type: none"> <li>Gujarat and Karnataka</li> </ul>	<ul style="list-style-type: none"> <li>AP and Gujarat RERA provides a unique functionality to check for status on agent/ project registration, online payments, etc.</li> </ul>
<b>Repository</b>	Ease of access to search for Registered projects /agents in RERA repository	✓	✓	<ul style="list-style-type: none"> <li>Maharashtra, Delhi and AP</li> </ul>	<ul style="list-style-type: none"> <li>Maharashtra repository platform provides advance search and filter features to search registered projec /agent repository</li> </ul>
	Provision to download list of registered project/ agents	✓	✓	<ul style="list-style-type: none"> <li>AP</li> </ul>	<ul style="list-style-type: none"> <li>AP RERA allow visitors to download the list of registered projects with respective briefs</li> </ul>
	Provision to download certification of registered project/ agents	✓	✓	<ul style="list-style-type: none"> <li>Maharashtra and Delhi</li> </ul>	<ul style="list-style-type: none"> <li>Delhi RERA provides easy access to QPRs and certifications of extension and registration of projects</li> </ul>
<b>Additional features</b>	Knowledge hub		✓	<ul style="list-style-type: none"> <li>Maharashtra and AP</li> </ul>	<ul style="list-style-type: none"> <li>AP RERA has created this hub for sharing documents like working practices, functions of authority, etc.</li> </ul>

**Table 4.1** Registration of projects

	Project registration	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
<b>Pre-registration</b>	Descriptiveness and use of graphics in user manual	✓	✓	• Gujarat, Karnataka and AP	• Gujarat RERA provides task-wise prescriptive manuals
	Pop-up of document checklist upon clicking on register	✓	✓	• Gujarat, Karnataka and MP	• Karnataka RERA provides checklist as well as manuals
	Fee calculator for project registration (w/o project regi.)	✓	✓	• AP	• Andhra Pradesh RERA provides an option to calculate fee
<b>Registration</b>	Response collection in quant friendly file format (spreadsheets)	✓	✓	• Gujarat and Karnataka	• Available in both Gujarat and Karnataka
	Fetching of information based on professional's registration #		✓	• Gujarat	• Gujarat RERA portal has this functionality
	Fetching of information based on promoter RERA number	✓	✓	• Gujarat and Karnataka	• Available in both Gujarat and Karnataka
	Info/notes next to fields	✓	✓	• Gujarat and MP	• Available in both Gujarat and Madhya Pradesh
	PAN validation of individuals vs. other than individuals	✓	✓	• AP	• AP RERA portal verifies PAN when it is entered
	Integration with map services	✓	✓	• Gujarat and MP	• Gujarat and MP portal has an integration with Google Maps
	Option for offline payment		✓	• Maharashtra and Haryana	• Karnataka and Haryana accept offline payments. This can be done away with
<b>Post-registration</b>	Provision for professionals to submit documents for promoter review		✓	• Gujarat	• Gujarat RERA portal has internal workflows which enable this functionality

**Table 4.2 Registration of agents**

	Agent registration	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
<b>Pre-registration</b>	Coverage and descriptiveness of user manual	✓	✓	• Gujarat, Maharashtra, AP and Karnata	• Gujarat RERA provides task-wise prescriptive manuals
	Ease of access to agent registration platform	✓	✓	• Easy across RERA portals	• Gujarat RERA provides direct access to agent registration portal on the main webpage
	General registration instructions on initiation (documents needed, link to user-manual)	✓	✓	• MP, Gujarat, AP, Karnataka and Delhi	• MP RERA has a detailed general instruction page with details on documents required, fees, etc
	Different forms initiation based on Individual/Non-individual input	✓	✓	• Available across RERA portals	• Reduces # steps and improves user centricity
	Validation for individual/non-individual agent status based on PAN number	✓	✓	• AP	• AP RERA allows validation of individual / non-individual agent status using PAN
	Explanatory notes next to field	✓	✓	• Gujarat and MP	• Gujarat RERA provides clear instruction on filing field details
<b>Registration</b>	Registration flow tab - (Details, upload documents, application preview, etc.)	✓	✓	• Karnataka, AP and Haryana	• Improves user understanding for application flow
	Sectioning (sub-agenda) of application form (Basic details, Address, Litigation details)	✓	✓	• Gujarat, Maharashtra and AP	• AP RERA has well structured sectioning and sub-sectioning of application for easy filing
	Provision for filling multiple branch details associated to agent	✓	✓	• Maharashtra	• Maharashtra allow agents to add details of multiple branches
<b>Post-reg.</b>	Provision to preview and download forms before payment	✓	✓	• Karnataka, AP and Haryana	• Allows user to re-check the filled details

**Table 5** Compliance and reporting

	Features in QPR/APR filing	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
QPR/APR initiation	Descriptiveness and use of graphics in user manual	✓	✓	• Gujarat and Karnataka	• Gujarat RERA provides task-wise description manuals
	Dashboarding QPR/APR records for past quarters	✓	✓	• Gujarat, Delhi and Karnataka	• Gujarat RERA has dashboard with additional color-coding feature to show QPR / APR status (submitted, exempted, defaulter, etc.)
	Marker for next submission deadline date	✓	✓	• Gujarat and Karnataka	• Gujarat RERA has this functionality
	Provision to assign professionals for filing quarterly progress	✓	✓	• Gujarat	• Gujarat RERA enable users to assign and re-assign professionals through its platform
QPR/APR filing	Info/notes next to fields	✓	✓	• None of the platforms have it in the compliance section	• No RERA platforms has this functionality for QRP
	Provision to save application progress	✓	✓	• Gujarat, Maharashtra and Karnataka	• Gujarat RERA uses excel files for updating data, which allows autosave for each change in data
	Provision for pre-filled inputs based on past records	✓	✓	• Gujarat and Maharashtra	• Gujarat and Maharashtra RERA has this functionality
	Sectioning of the application form	✓	✓	• Maharashtra, Karnataka and Haryana	• Karnataka platform has an extra level of sub-sectioning which allows better form navigation
	Tab representing the application flow	✓	✓	• Maharashtra and Karnataka	• Maharashtra and Karnataka has this functionality to cycle through different parts of the application
QPR/APR submission	Provision to cross-verify data between promoter and professionals		✓	• Gujarat	• Gujarat platform allow CA to report observations to the promoter for concerns on other professional certifications

**Table 6 Promoter/professional dashboards**

	Dashboard features	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
Design	<ul style="list-style-type: none"> <li>Look and feel of dashboard</li> </ul>	✓	✓	<ul style="list-style-type: none"> <li>Gujarat, Maharashtra and Karnataka</li> </ul>	<ul style="list-style-type: none"> <li>Gujarat RERA has a simplistic intuitive dashboard design</li> </ul>
	<ul style="list-style-type: none"> <li>Top ribbon with important links (website homepage, log-out, etc.)</li> </ul>	✓	✓	<ul style="list-style-type: none"> <li>Gujarat, Maharashtra and Haryana</li> </ul>	<ul style="list-style-type: none"> <li>Gujarat RERA top ribbon adds value both to the functionality and design of dashboard</li> </ul>
	<ul style="list-style-type: none"> <li>Different sections with bucketing of similar web-links</li> </ul>	✓	✓	<ul style="list-style-type: none"> <li>Gujarat, Maharashtra and Karnataka</li> </ul>	<ul style="list-style-type: none"> <li>Enables users to access and identify different items/links with ease</li> </ul>
Project section	<ul style="list-style-type: none"> <li>Project section with overview of ongoing projects</li> </ul>	✓	✓	<ul style="list-style-type: none"> <li>Gujarat, Maharashtra and Karnataka</li> </ul>	<ul style="list-style-type: none"> <li>Karnataka project section has relevant details and single-click access to project relevant actions</li> </ul>
	<ul style="list-style-type: none"> <li>Direct-access to actions available for each project in project section</li> </ul>	✓	✓	<ul style="list-style-type: none"> <li>Karnataka and Delhi</li> </ul>	<ul style="list-style-type: none"> <li>Enables users to directly initiate project editing or progress update</li> </ul>
Menu section	<ul style="list-style-type: none"> <li>Menu section with access to other relevant links and forms</li> </ul>	✓	✓	<ul style="list-style-type: none"> <li>Maharashtra, Karnataka and Haryana</li> </ul>	<ul style="list-style-type: none"> <li>Menu with links to applications like complaint form, project extension, etc)</li> </ul>
	<ul style="list-style-type: none"> <li>Availability of relevant links in the menu section</li> </ul>	✓	✓	<ul style="list-style-type: none"> <li>Maharashtra and Karnataka</li> </ul>	<ul style="list-style-type: none"> <li>Maharashtra RERA has access to relevant forms like project extension, payment receipts, etc</li> </ul>
Other accessibility features	<ul style="list-style-type: none"> <li>Floating chatbot</li> </ul>		✓	<ul style="list-style-type: none"> <li>Gujarat</li> </ul>	<ul style="list-style-type: none"> <li>Gujarat RERA has provided a floating chatbot for solving queries. This facility will require setting up of helpdesk at the back-end</li> </ul>
	<ul style="list-style-type: none"> <li>Single click access to log-out functionality</li> </ul>	✓	✓	<ul style="list-style-type: none"> <li>Maharashtra, Karnataka and Delhi</li> </ul>	<ul style="list-style-type: none"> <li>Enables user to quickly access and close their activity session</li> </ul>

**Table 7.1** Complaints registration

	Complaint registration	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
Access of tab for complaint	• Presence of a user manual	✓	✓	• Gujarat, AP and Haryana	• Gujarat RERA provides task-wise prescriptive manuals
	• Descriptiveness and use of graphics in user manual	✓	✓	• Gujarat and AP	• Gujarat RERA uses screenshots to explain the usage
	• Ease of access to initiate registration	✓	✓	• Gujarat, Karnataka, Haryana and MP	• Most platforms have a separate tab on the homepage
Logging in	• Option of phone number to login	✓	✓	• Not available across platforms	• Email ID was required by all the platforms
	• Use of OTP verification	✓	✓	• Gujarat, Haryana and MP	• Gujarat RERA uses only a OTP for logging in
Filling and submitting the application	• Creating a profile with details of the user	✓	✓	• Maharashtra and Karnataka	• Basic details of the user can be stored
	• Info/notes next to fields	✓	✓	• MP	• Easy to understand with notes next to form fields
	• Provision to save application progress	✓	✓	• Maharashtra	• Maharashtra RERA had the option to save the profile details
	• Provision for pre-filled inputs based on past records	✓	✓	• Not available across platforms	• None of the platforms had this option which is useful in case a person files multiple complains
	• Compartmentalization of the form	✓	✓	• Maharashtra and Karnataka	• Maharashtra and Karnataka provided a flow tab for easier tracking
	• Option of e-payment	✓	✓	• Available across platforms	• The fees could be paid electronically
	• Tracking of detailed complaints log	✓	✓	• Gujarat and Haryana	• Complaints can be tracked separately once logged in

**Table 7.2** Access to complaints and grievance redressal data

	Access of complaints data	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
<b>Access to information about past cases</b>	Access of information on past cases	✓	✓	• Available across platforms	• All platforms allows past cases information to be accessed
	Past judgement can be downloaded	✓	✓	• Available across platforms	• Past judgements can be downloaded in pdf format
	Date of judgement mentioned	✓	✓	• Available across platforms	• Date of passing of judgement in separately mentioned
	Date of application mentioned	✓	✓	• MP and Delhi	• Date of application filing in separately mentioned
<b>Ease of sorting and searching of information</b>	City-wise search/filter functionality	✓	✓	• Gujarat	• City-wise hyperlinked data is provided
	Authority type/type of case wise search/filter functionality	✓	✓	• Gujarat, MP and Delhi	• Authority wise hyperlinked data is provided
	Sorting by alphabetical/numerical order	✓	✓	• MP	• Sorting of data points for easy search
	Presence of search bar	✓	✓	• Available across platforms	• Presence of search bar to search keywords
	Project-wise past cases	✓	✓	• Karnataka	• All cases against a project in one place
	Promoter-wise past cases	✓	✓	• Karnataka	• All cases against a promoter in one place
<b>Others</b>	Daily cause list	✓	✓	• Available across platforms	• List of all causes

**Table 8** Additional user-friendly features

	Additional user-friendly features	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
<b>User manual</b>	• User manuals - Availability	✓	✓	• Gujarat, Karnataka and AP	• An exhaustive user manual explaining all the features and steps
	• User manuals - Ease of understanding	✓	✓	• Gujarat, Karnataka and AP	• User manual is easy to understand with use of screenshots
	• User manuals - Ease of locating	✓	✓	• Gujarat and AP	• User should be able to intuitively find the manual
<b>Ease of sorting and searching of information</b>	• FAQs section - Availability	✓	✓	• Gujarat, Maharashtra, Karnataka, Delhi and AP	• FAQs section was placed either in the main ribbon or at the bottom
	• Chat bot - Availability		✓	• Gujarat	• Chatbot feature for user to ask questions with reply either being automated or from an agent
	• Sitemap - Availability	✓	✓	• Maharashtra, AP and Haryana	• Snap of the entire website flow for users
	• Citizen survey/feedback	✓	✓	• Gujarat, AP and MP	• Collection of user feedback
<b>Others</b>	• Contact of office holders	✓	✓	• Gujarat, Karnataka, AP, MP and Delhi	• Contact number of the office bearers mentioned
	• Presence of offline form format	✓	✓	• Available across platforms	• Format of forms to be uploaded/submitted
	• Project maps	✓	✓	• Gujarat, Maharashtra and MP	• Map showing details of all projects

**Table 9** Mobile app

	App features	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
<b>Design and app interface</b>	• Login functionality of app	✓	✓	• Scope of improvement across states	• Login interface can be improved across
	• User-interface	✓	✓	• Gujarat and Chhattisgarh	• Gujarat RERA looks modern and intuitive
	• User experience	✓	✓	• Chhattisgarh	• Smooth interaction and navigation across app functionalities
<b>User-centricity</b>	• Customized dashboard basis type of logged-in user (promoter, professional, citizen or agent)	✓	✓	• Gujarat	• Gujarat RERA has custom dashboard for each individual
<b>Repository (Agents, projects, complaints)</b>	• Repository of projects, agents and complaints	✓	✓	• Gujarat and Chhattisgarh	• Repository available across Guj and Chhattisgarh
	• Feature of filter and search in repository	✓	✓	• Gujarat and Chhattisgarh	• Repository available across Guj and Chhattisgarh
<b>Complaints</b>	• Provision to file complaint		✓	• Uttar Pradesh	• Only available in UP app
	• Grievance redressal information	✓	✓	• Available across RERA apps	• Available across RERA apps
<b>RERA registration verification</b>	• Provision to verify of project or agent registration	✓	✓	• Available across RERA apps	• Available across RERA apps
<b>Other features</b>	• Facility to raise support tickets from app	✓	✓	• Gujarat and Chhattisgarh	• Ticketing system available across Guj and CH
	• Provision to look for other RERA services	✓	✓	• Gujarat and Chhattisgarh	• Service details available across Guj and CH

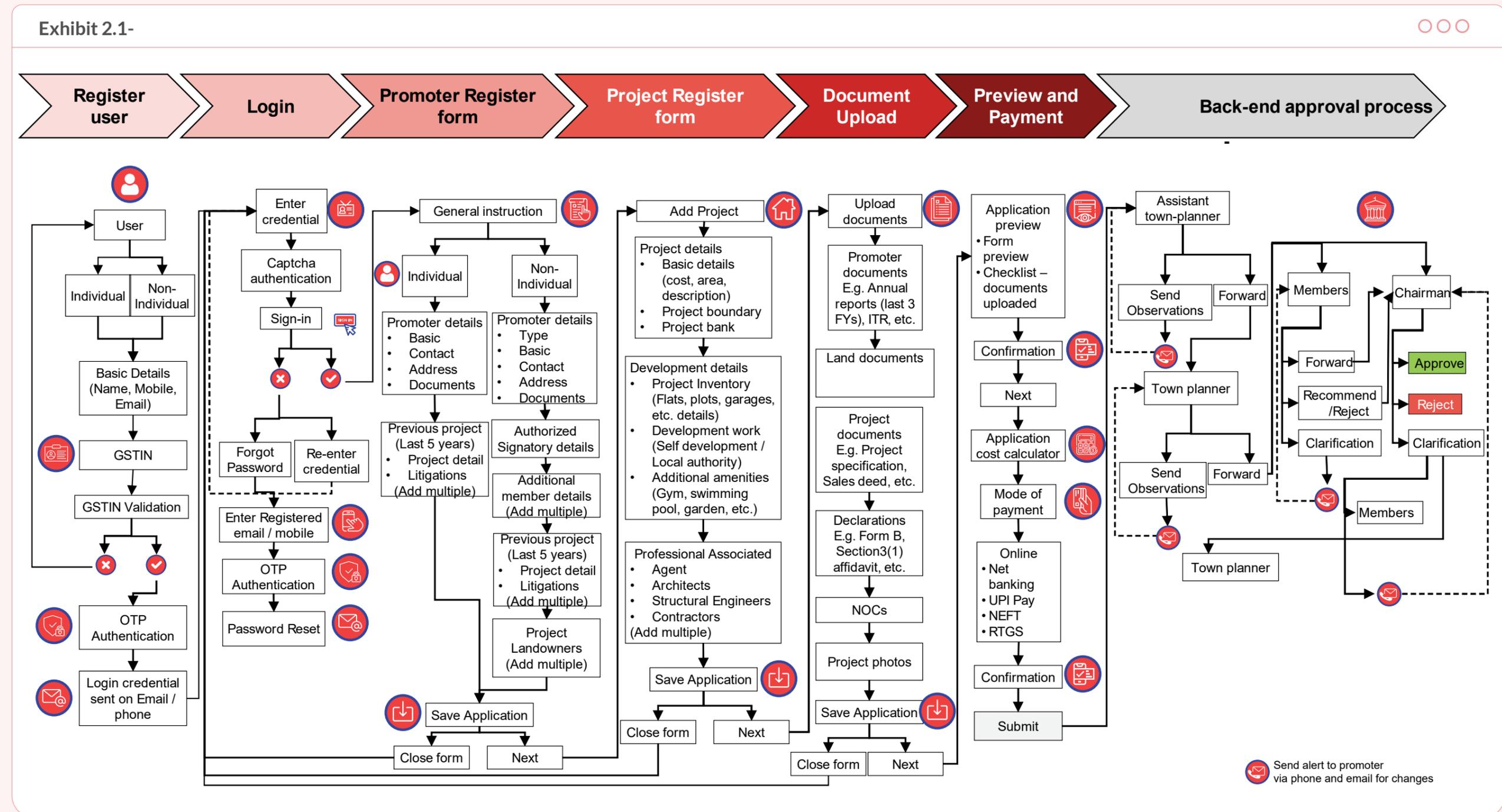
**Table 10** Other features

	Other features	Requirement across RERA portals based on size		Top states	Comments
		Must have Small	Must have Large		
<b>Regulation access and standardization</b>	• RERA annual reports of multiple years	✓	✓	• Gujarat, Maharashtra and Haryana	• Annual reports of multiple years are available
	• ISO Certification	✓	✓	• Maharashtra	• Only Maharashtra has an ISO certification
	• RTI links	✓	✓	• Available across states	• RERA platforms display the RTI link prominently on their websites
	• RERA act mentioned	✓	✓	• Available across states	• All RERA platforms had a section on the RERA Act and rules & regulations
	• Organizational structure mentioned		✓	• Gujarat, Maharashtra and Karnataka	• Organizational structure was shown along with few position holders
	• Updates/ notices window on homepage	✓	✓	• Available across platforms except Haryana	• Most platforms had a separate tab for recent quick notifications
	• Media/photo gallery		✓	• Maharashtra, Karnataka and AP	• A section for photos from recent events like webinars for knowledge transfer, etc.

# Appendix 2: Illustrative process flows for modules

This subsection highlights the process flows for Project registration, Quarterly progress report and Annual progress report. Also, key features for project registration applications are highlighted for each process flow

## Project registration process flow

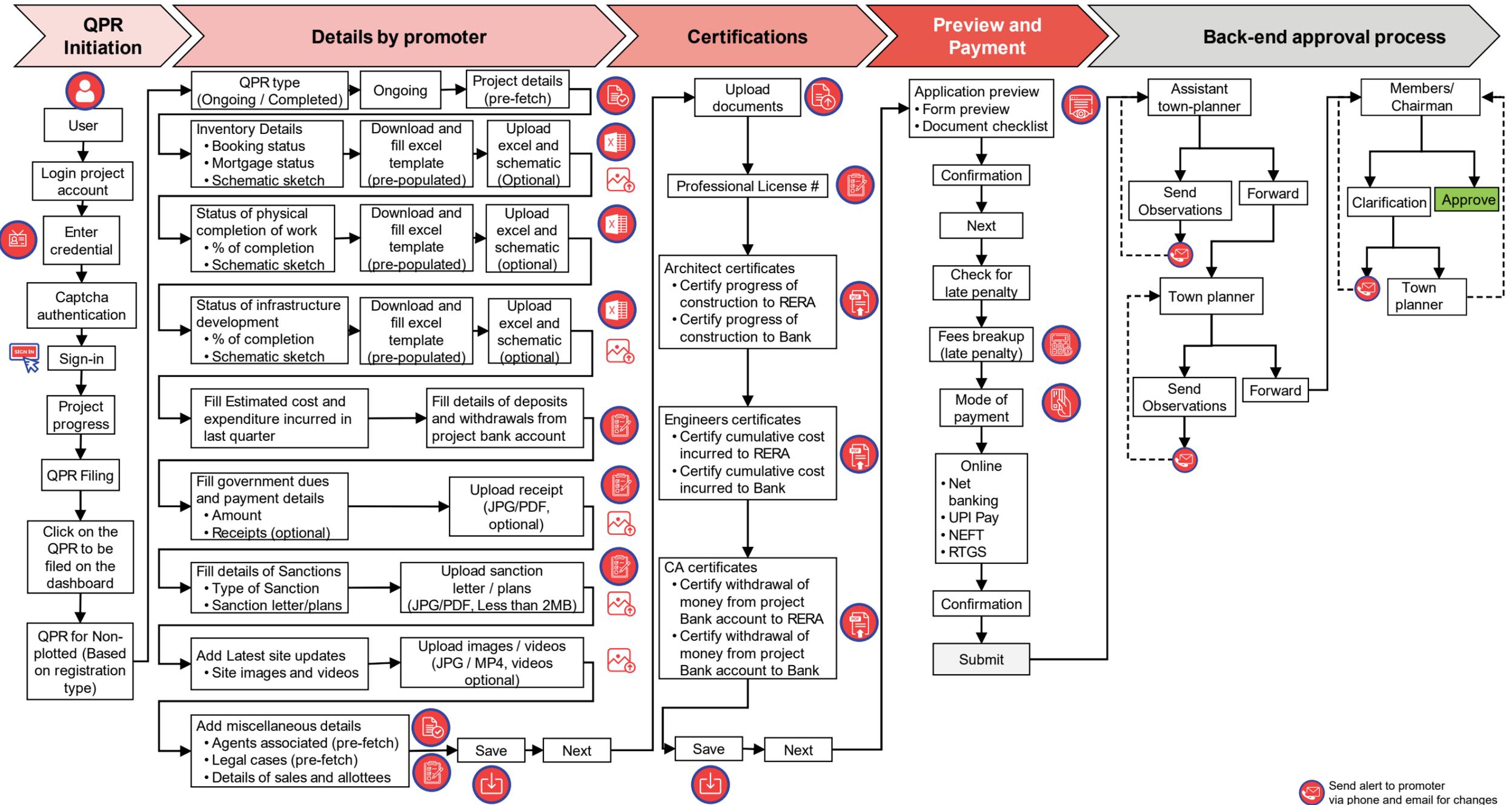


### Key features

- 01 Project registration application form requires multiple details and documents, therefore a functionality of saving the application is important
- 02 GSTIN validation to prevent registration of spam users on webserver, thus reducing the load on webserver
- 03 In case an application is reverted back to promoter, only selected sections should be open to edit, thus reducing the redundancy of checking information at authority end

# QPR submission process flow

Exhibit 2.2

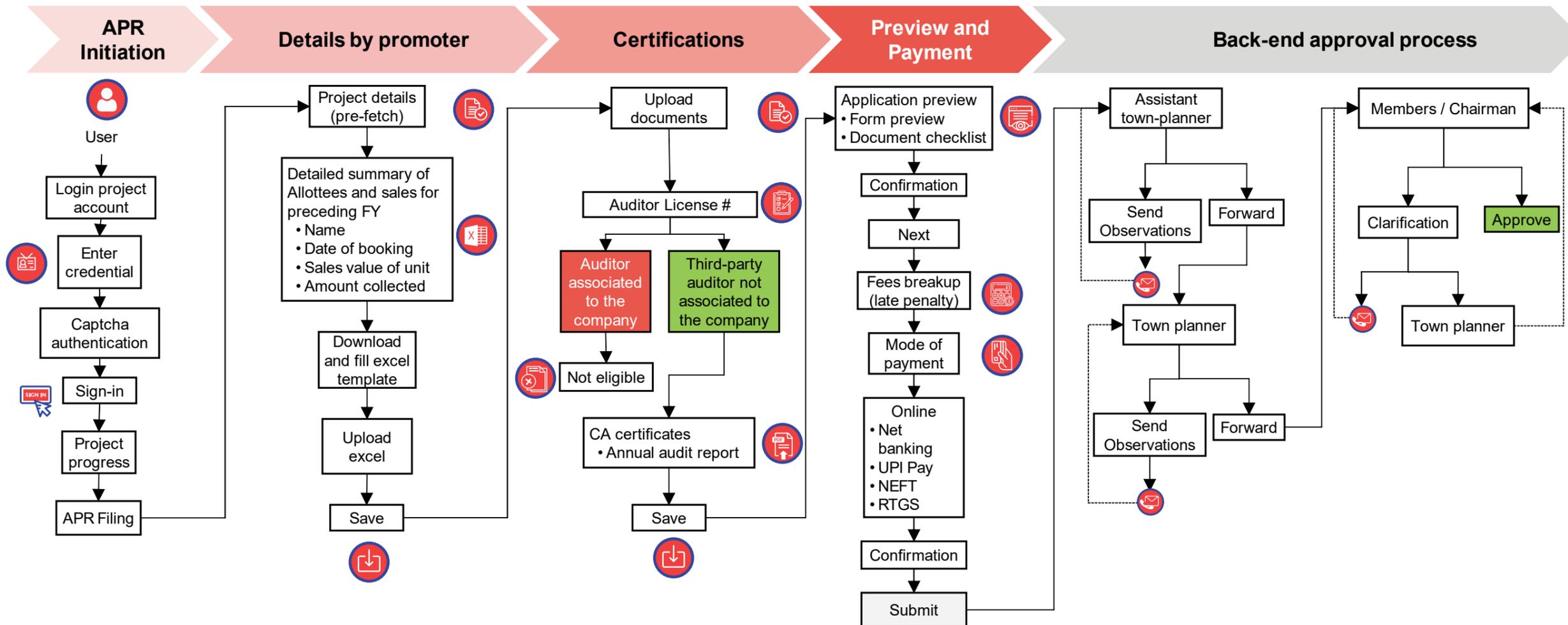


## Key features

- 01 Information is added using excel spreadsheets, which increases the functionality for promoters
- 02 Validation of license/registration numbers for all the professionals – Architects, Engineers and Chartered Accountant before accepting the certification
- 03 Approval from authority for submitted QPRs before publishing the information on public domain

# APR submission process flow

Exhibit 2.3



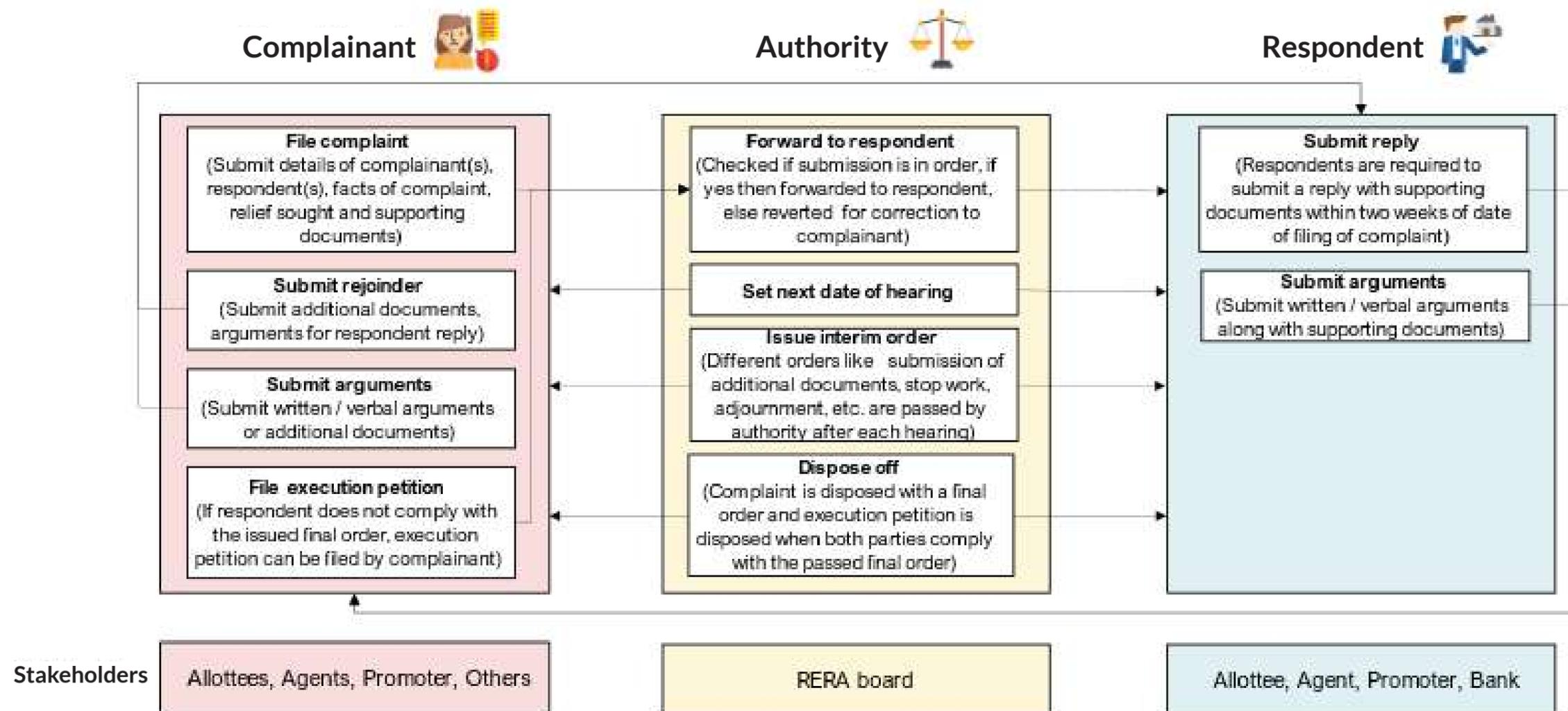
Send alert to promoter via phone and email for changes

## Key features

- 01 Information are added using excel spreadsheets, which increases the functionality for promoters
- 02 Validation of license number of Auditor to check eligibility. In case of APR, auditor must be a third-party CA who has not been associated to project for any submissions like QPR – CA certificate, from the date of registration
- 03 Approval from authority for submitted APRs before publishing the information on public domain

# Complaint registration process flow

Exhibit 2.4



## Key features

- 01 eparate login for complainant and respondent to make e-submission of documents and arguments
- 02 Multiple respondents and complainants can be added to a complaint
- 03 Provision to file execution petition in cases where final order is not complied by the respondent
- 04 Provision for different stakeholders to be included as complainant/respondent

# Appendix 3: Sample wireframe/UX for the portal

In this subsection different UI interfaces are added showcasing the unique functionalities of the platform.

## Project dashboard for promoters

Exhibit 3.1



**STATE REAL ESTATE REGULATORY AUTHORITY** Welcome Promoter

**Project Details**

RERA Registration Number	Project Name	Project Type	Overall completion status	Registration Certificate	Completion Certificate
16155250558	abcd defg	Residential	50%	Download	-

**Project booking detail**

Type of Inventory	Total number of units	Units booked	Units remaining	Amount collected (In Lakh INR)
Flat / Apartments	100	35	65	100
Commercial Units	10	6	4	20

**Submitted / Pending applications**

Application	Last Modified	Deadline	Status	Actions
Project Alteration	2/12/2020	-	Waiting for approval	-
QPR (Q3, 2020-21)	30/11/2020	15/1/2021	Not submitted	Edit application
Project Alteration	2/12/2020	-	Waiting for approval	-

**Upcoming hearings**

Complaint number	Complainant name	Hearing date	Authority	Issue
105461651	ABC XYZ	15/12/2020	RERA Authority	Issue 1
154151554	BCD WYX	23/12/2020	Appellate Tribunal Judiciary	Issue 2
105461651	ABC XYZ	15/12/2020	RERA Authority	Issue 1
154151554	BCD WYX	23/12/2020	Appellate Tribunal Judiciary	Issue 2

**Assign Manager**  
Assigned manager's can submit reports and applications on behalf of promoter.  
[Assign Manager](#)

**Alerts**  
Project Alteration - Approved  
Project Extension - Approved  
QPR (Q3, 2020-21) - Approved  
APR (FY 2019-20) - Approved  
QPR (Q3, 2020-21) - Deadline  
Observations in APR submitted  
Final Reminder - Submit QPR  
Respond to observations - APR

**December 2020**

Mo	Tu	We	Th	Fr	Sa	Su
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

# Project view for citizens

Exhibit 3.2



## "PROJECT NAME"

Promoter profile
Project details
Development details
Project documents
Professionals
Legal cases
Photos
Progress reports

### Project documents

Non-Encumbrance Certificate

Sales Deed / Gift deed / Conveyance deed / other deeds

Sanctioned Building Plan / Plot Sub-division Plan

Area development plan / Site development plan

Collaboration / Development / Joint / Other Agreement

Proforma of Agreement of Sale

Project Specifications

Brochure of the Project

Domestic under Co

**Original | Updated**

Jamabandhi

Tatima

Sanctioned Letter

Sanctioned Site Plan

Proforma of Allotment Letter

Undertaking on Agreement of Sale

Proforma of Sales Deed

Structural Stability Certificate

### Project location

### Booking details

Total units: 150

Booked units: 60

Remaining units: 90

Type	Total	Remaining
Apartments	50	20
Commercial	50	20
Plots	50	20

### Reviews

Full name	"Title"

### Similar projects

Project name
Project name

Interactive navigation bar to view different information on a project

Availability of original and updated information for a project at any point of time

Original | Updated

GIS mapping to show location of project on map view

Option to add review on projects by allottees, agents, others, etc.

Inventory-wise booking details of the project

Ability to view similar projects based ML based clustering

# QPR dashboard for promoters

Exhibit 3.3



STATE REAL ESTATE REGULATORY AUTHORITY Welcome Promoter [→]

## QPR Dashboard

Color coding to display submission status for Quarterly progress reports for different quarters

- Active
- Submitted
- Inactive
- Late Submissions

Year	Q4	Q3	Q2	Q1
2020-2021	Inactive	Active	Submitted	Submitted
2019-2020	Submitted	Late Submissions	Submitted	Submitted
2018-2019	Submitted	Submitted	Submitted	Submitted
2017-2018	Submitted	Late Submissions	Submitted	Submitted
2016-2017				

2016-2017

- Overview
- Project details
- Progress Reporting
  - QPR Filing
  - APR Filing
- Complaints
- Applications
  - Extend project
  - Update project details
- Official Communication
- User Guides

# Sample authority dashboard

Exhibit 3.4



**MANAGE REGISTRATIONS**

Projects

Agents

**Total projects**  Registered  Pending

District: Selected list item

**Project type**

Promoter type

Land size

Project cost

[View All](#)

**Applications pending**

S. No.	Application number	Project name	Promoter name	Date of last change
1	XXXXXXXXXX	Project Name	Full name	20/12/2020
2	XXXXXXXXXX	Project Name	Full name	20/12/2020
3	XXXXXXXXXX	Project Name	Full name	20/12/2020
4	XXXXXXXXXX	Project Name	Full name	20/12/2020
5	XXXXXXXXXX	Project Name	Full name	20/12/2020

**MANAGE LEGAL CASES**

Complaints

Execution petition

**Complaints pending**

S. No.	Complaint no.	Complaint type	Associated project	Date of filing	Next date of hearing
1	XXXXXXXXXX	Finance, delayed possession, dispute in land ownership	Project Name	12/11/2020	15/12/2020
2	XXXXXXXXXX	Finance, delayed possession, dispute in land ownership	Project Name	12/11/2020	15/12/2020
3	XXXXXXXXXX	Finance, delayed possession, dispute in land ownership	Project Name	12/11/2020	15/12/2020

# About



Praxis Global Alliance is a next-gen management consulting and business research services firm revolutionizing the way consulting projects are delivered. It delivers practical solutions to the toughest business problems by uniquely combining domain practitioner expertise, AI-led research approaches, and digital technologies. We are a full stack firm integrated across advisory and consulting, market research, digital, analytics and people solution. Within our Social and Impact advisory practice, we help not-for-profit organizations, philanthropic foundations, impact investors, think-tanks, Development Finance Institutions and Government bodies to design and manage high-impact initiatives with our collaborative and outcome-oriented approach.



Omidyar Network India (ONI) invests in bold entrepreneurs who help create a meaningful life for every Indian, especially the hundreds of millions of Indians in low-income and lower-middle-income populations, ranging from the poorest among us to the existing middle class. To drive empowerment and social impact at scale, ONI works with entrepreneurs in the private, non-profit, and public sectors, who are tackling India's hardest and most chronic problems. ONI makes equity investments in early-stage enterprises and provide grants to non-profits in the areas of Digital Identity, Education, Emerging Tech, Financial Inclusion, Governance & Citizen Engagement, and Property Rights. Omidyar Network India is part of the Omidyar Group, a diverse collection of companies, organizations, and initiatives, supported by philanthropists Pam and Pierre Omidyar, founder of eBay.

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