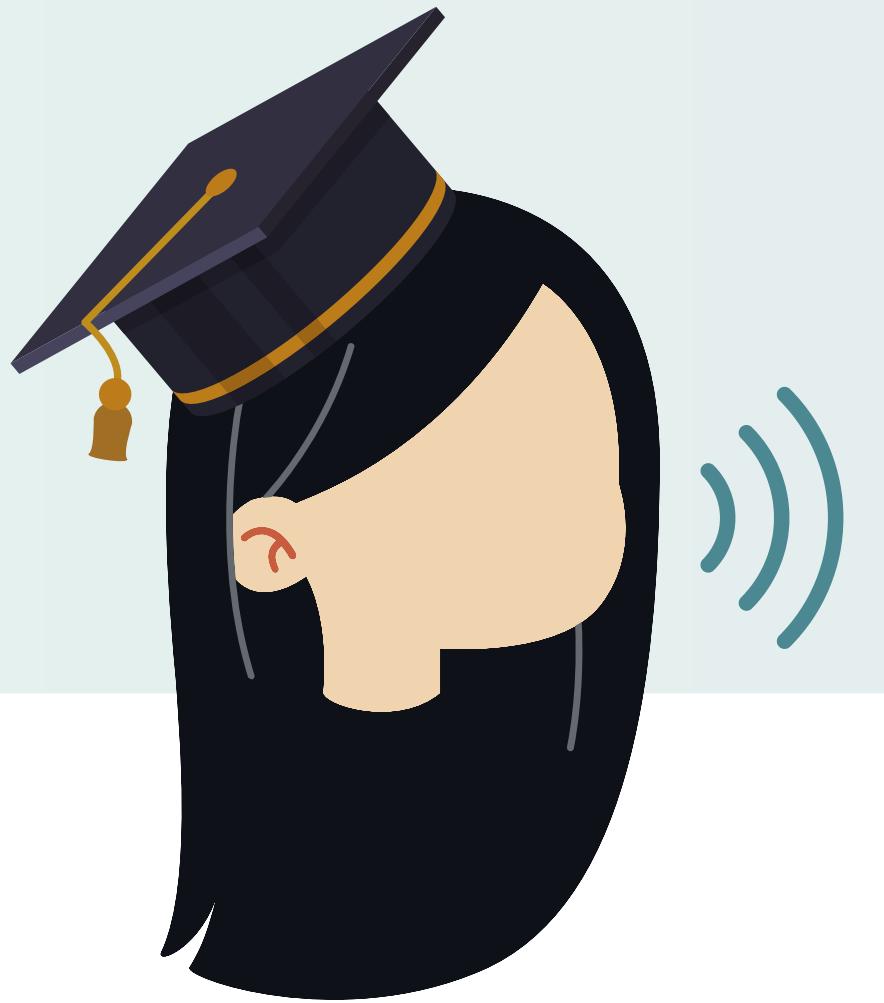


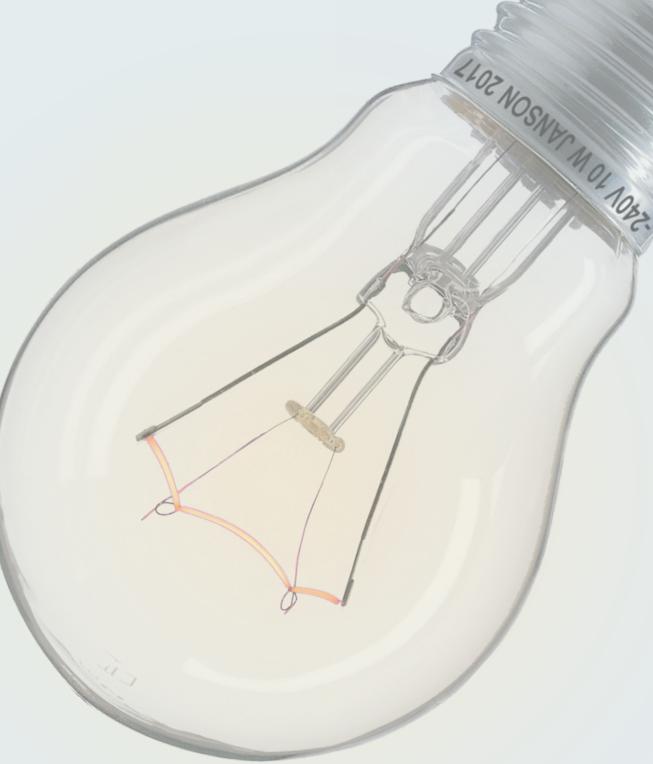
بِلْوَرَةُ الْأَفْكَارِ  
BALLORA

Dr. Shereen Saif Eldin





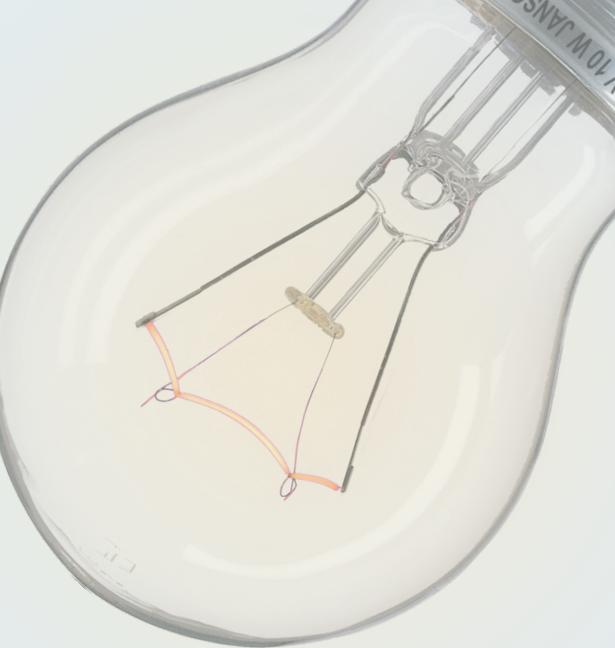
**Marya  
Alkanani**



# OVERVIEW

- Introduction
- Target users
- Prototype and Features
- Final Design
- Testing
- Result and Conclusion

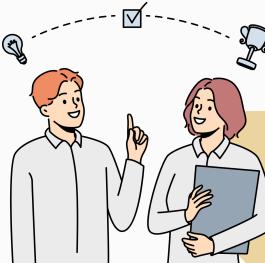
# INTRODUCTION





## What is Ballora?

Ballora is an innovative digital platform that bridges the gap between idea owners and investors. It validates ideas using AI, generates business models, and allows idea owners to develop their ideas with guidance from the Innovation and Entrepreneurship Center before presenting them to investors. Ballora empowers creativity, accelerates growth, and connects vision with investment.



## Why Ballora?

- Provides advanced idea analysis using AI.
- Helps improve and develop ideas by offering the needed support.
- Connects students with investors to support and bring their ideas to life.
- Secure system with Non-Disclosure Agreement (NDA).

# TARGET USERS



## A. IDEA OWNERS

Students with innovative ideas who want to submit their projects, receive feedback, and develop them through university innovation centers.



## B. INNOVATION & ENTREPRENEURSHIP CENTERS

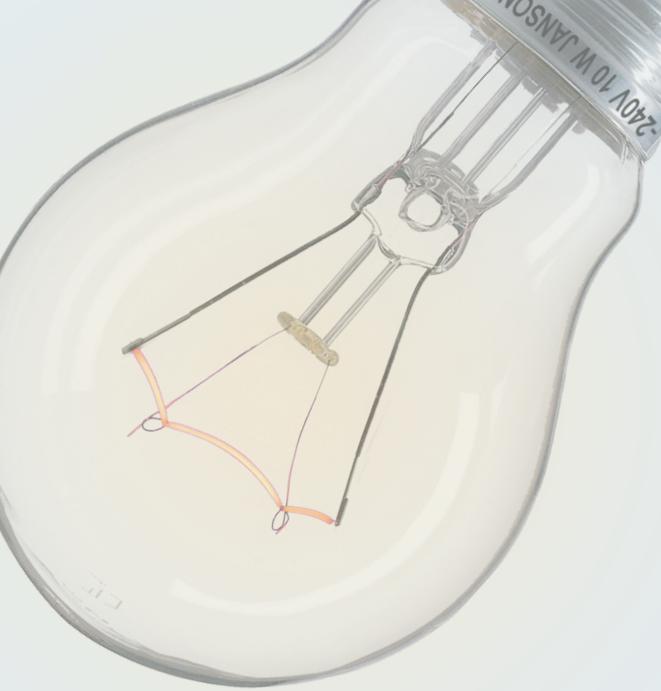
University Entrepreneurship Center seeking to discover and support student ideas.



## C. INVESTORS

Investors aiming to access promising, entrepreneurial ideas.

# PROTOTYPE & FEATURES





# IDEA OWNER INTERFACES

The landing interface features a large central call-to-action text: "Turn your Idea into Reality with Ballora". Below this is a teal button labeled "Discover". At the top, there's a navigation bar with links for "BALLORA", "Home", "Ideas", "Investors", "sign in", and a teal "Join us" button. The MacBook Pro base is visible at the bottom.

Landing Interface

The Ideas interface shows a main heading "Ideas" and a sub-section titled "Add your first idea to Start your journey". It includes a sub-instruction "Tap here to open the form and the AI will generate your business model". A teal "Add Idea +" button is located at the bottom left of this section. To the right is a graphic of a glowing yellow lightbulb. The top navigation bar includes "My Account" and other links. The MacBook Pro base is visible at the bottom.

Add Idea



# IDEA OWNER INTERFACES

Idea Name  
SmartTrack

Problem  
Many individuals struggle with keeping track of their Many individuals struggle with keeping track of their

Solution  
SmartTrack is a compact IoT-powered device that connects to a smart application, helping users keep track of their belongings.

Competitive advantage  
SmartTrack is a compact IoT-powered device that connects to a smart application, helping users keep track of their belongings.

Idea Level ⓘ  
Idea

Generating a business model

Idea Name  
Smart Health Tracker

Problem  
Many people struggle to monitor their daily health metrics accurately, leading to late detection of potential health issues.

Solution  
A wearable device paired with a mobile app that tracks vitals like heart rate, sleep, activity, and nutrition, and provides personalized recommendations.

Competitive Advantage  
Real-time monitoring, AI-powered insights, integration with other health apps, and personalized health tips.

Idea Levels ⓘ  
Prototype

Idea Fields

**Idea Rejected (Score: 1)**  
Your idea is too similar to an existing one: "Smart Health Tracker".

**Why Similar:**

- Both the new idea and the "Smart Health Tracker" aim to monitor daily health metrics using wearable devices and companion apps.
- Both solutions leverage AI for personalized insights and recommendations.
- Both integrate with other health applications to provide a holistic view of user health.

**Niche Pivots:**

- For Tourism & Entertainment: Focus on 'wellness tourism' by integrating with travel bookings to suggest health-conscious activities, accommodations, and dining options based on user's real-time health data (e.g., recommending low-impact hikes for someone with elevated heart rate, or suggesting restaurants with specific nutritional profiles).
- For Education: Develop a 'student wellness tracker' that monitors sleep, activity, and stress levels, correlating them with academic performance. Offer recommendations for study breaks, mindfulness exercises, or time management strategies tailored to individual learning patterns and energy levels.
- Create a gamified experience within the app that rewards users for achieving health goals relevant to their chosen niche (e.g., 'explore a new city with X steps' for tourism, or 'maintain Y hours of sleep during exam week' for education).

**Feature Differentiators:**

- Develop a 'Health-Aware Itinerary Planner' for the tourism niche that dynamically adjusts suggested activities based on the user's current physiological state (e.g., suggesting a relaxing spa instead of a strenuous hike if the user is fatigued).
- Implement an 'Academic Performance Correlation Engine' for the education niche that provides actionable insights into sleep, nutrition, and activity impact grades, offering personalized study habit recommendations.
- Integrate with specific platforms relevant to the niches, e.g. booking travel packages, nutrition tracking apps, etc.

Recommendations for improving the idea



# CENTER INTERFACES

**Idea state update**

The interface shows a form titled "Update state" for changing the state of an idea. It includes a dropdown menu for selecting the new state, currently set to "Incubation state". A button labeled "Update" is at the bottom.

**View all ideas**

This interface displays a list of ideas. One idea is shown in detail: LogiChain, which is in the "Waiting state". The details include its logo, state, idea level (Prototype), field (Logistics & Supply Chain), and a brief description: "A blockchain-based system for tracking shipments and improving transparency in supply chains." A "Details" button is available for more information.

**Add activities**

The interface shows a table titled "Activities" where new activities can be added. The columns are Duration, Activity Template, Completed Activity, State, and Comment. Several rows are listed, each with a download button, a status dropdown (e.g., Done, Waiting), and a comment section.

**View all ideas**



# INVESTOR INTERFACES

The image displays three screenshots of the BALLORA investor interface on a Macbook Pro. The top-left screenshot shows the 'Ideas' page with two projects listed: 'LogiChain' and 'MediTrack'. The top-right screenshot shows the 'Chat' page where an investor named 'ahmed investor' is messaging other investors. The bottom screenshot shows the 'Contact' page, which includes a 'Start' button to open a chat with the idea owner.

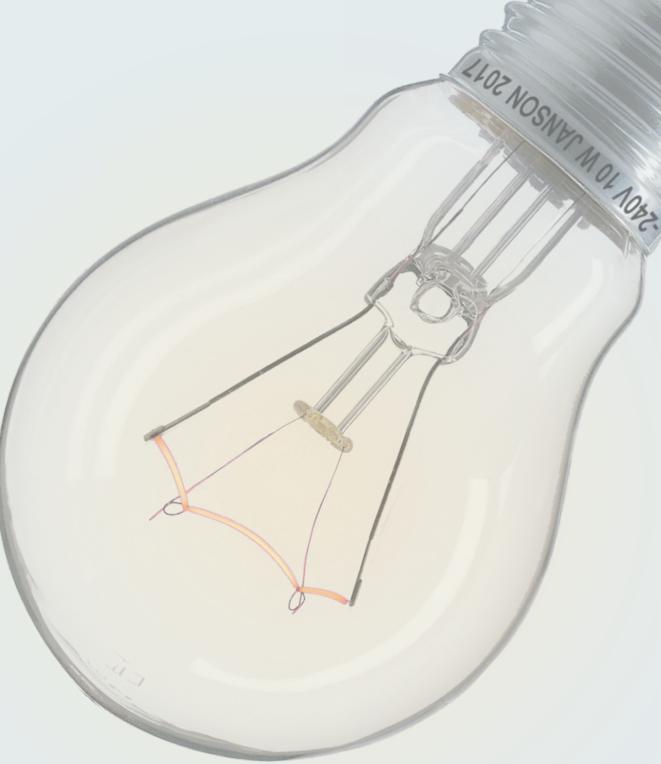
**Choosing an idea**

**Open chatting**

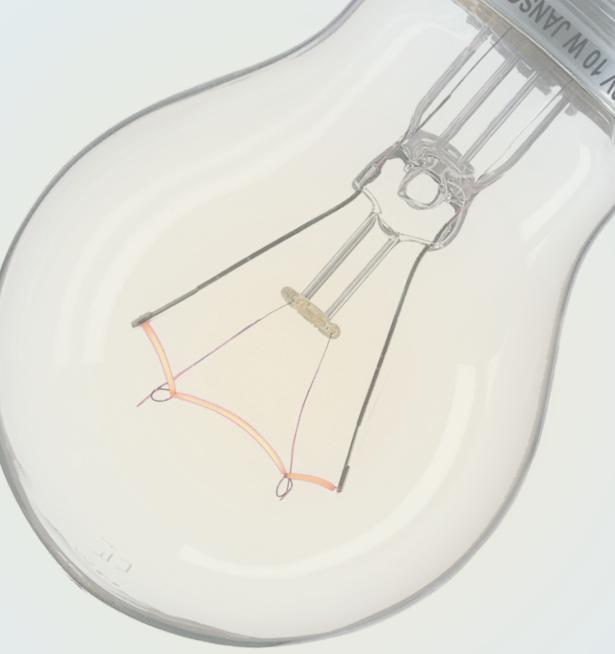
**chatting with idea owner**



**Layan  
Aljohani**



# FINAL DESIGN



# FINAL DESIGN

## Reasons for Diagram Modifications:

01

**Updated the labels/names**

03

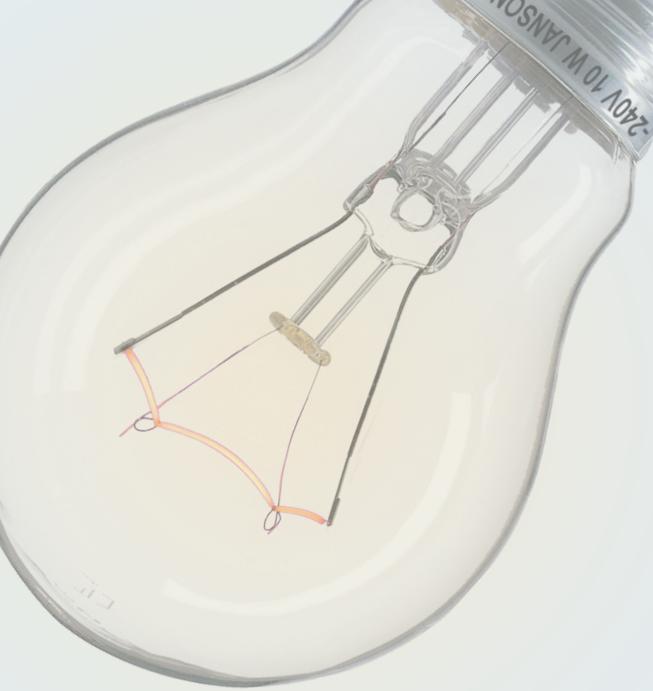
**Reorganized the workflow steps**

02

**Removed the Payment Function**

04

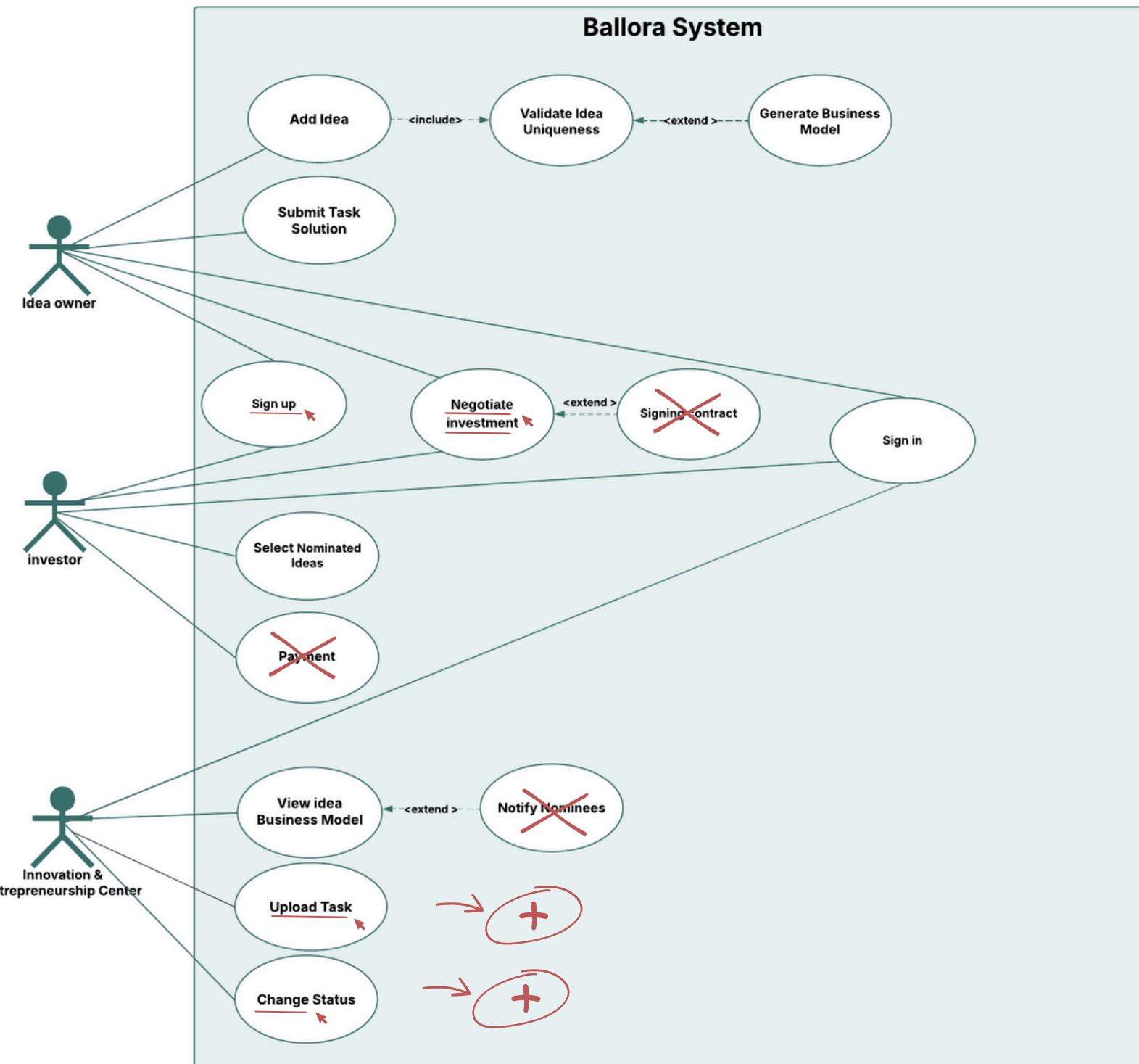
**Removed the encryption functions**



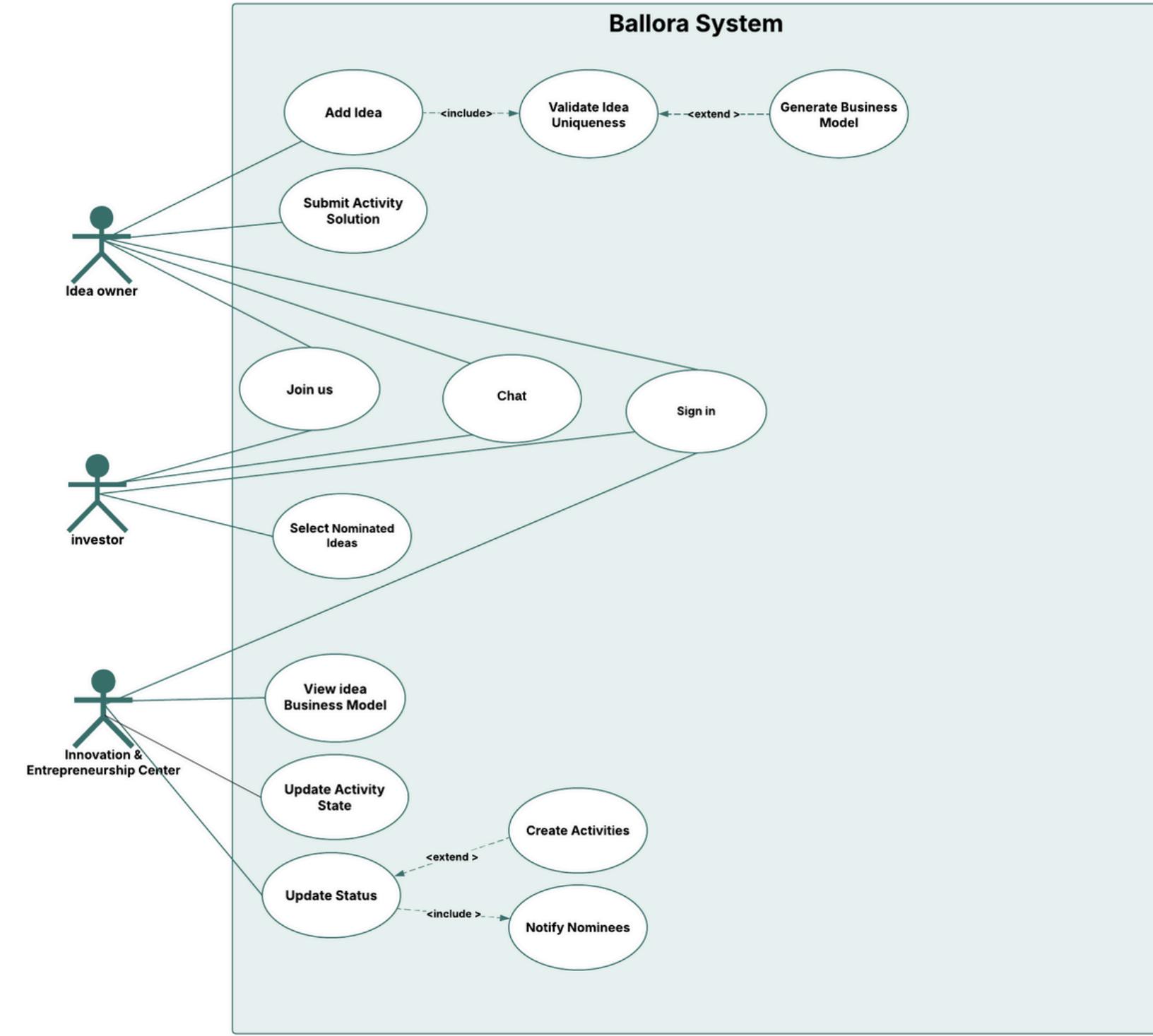
# USE CASE DIAGRAM



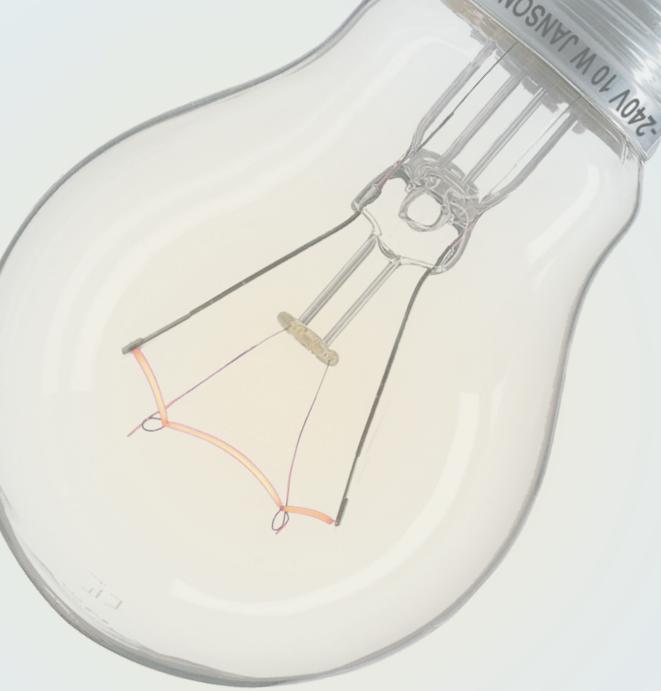
# BEFORE



# AFTER

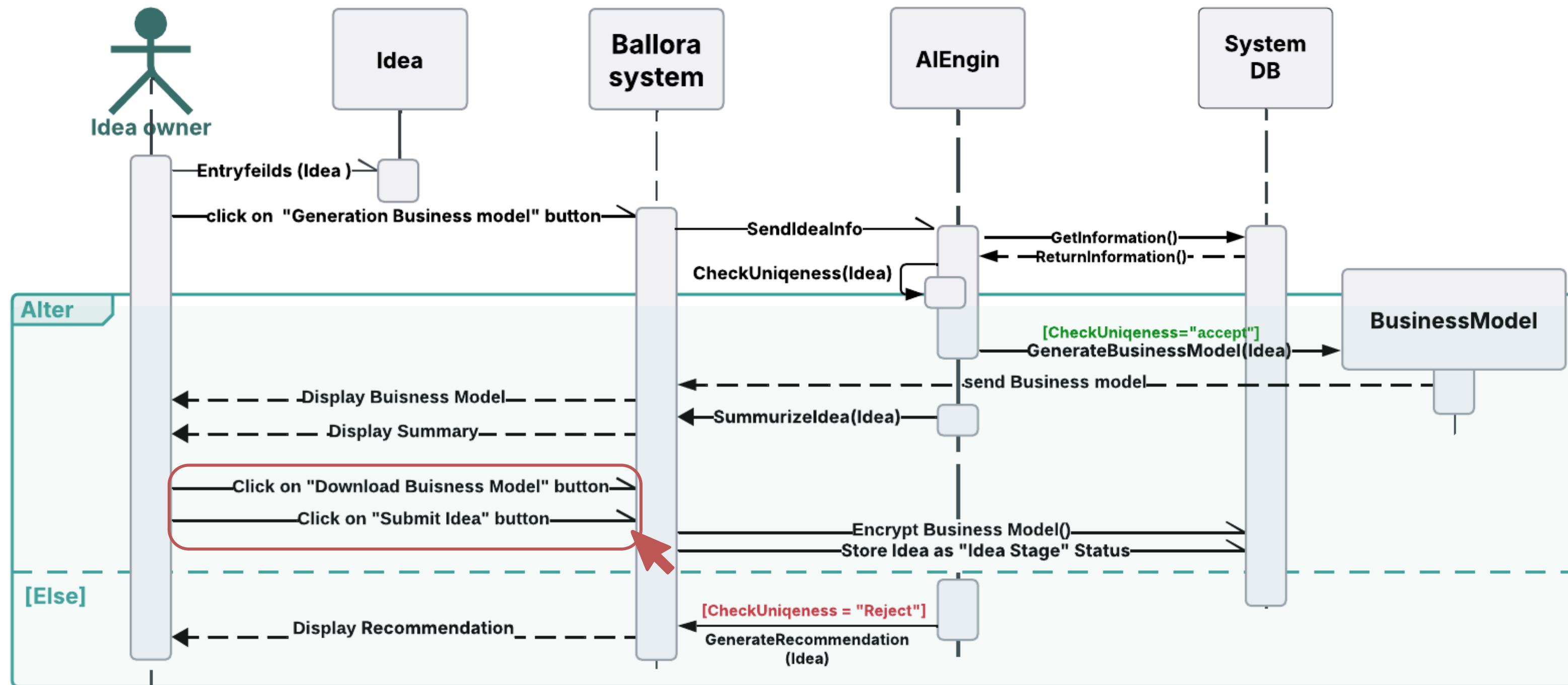


# SEQUENCE DIAGRAM



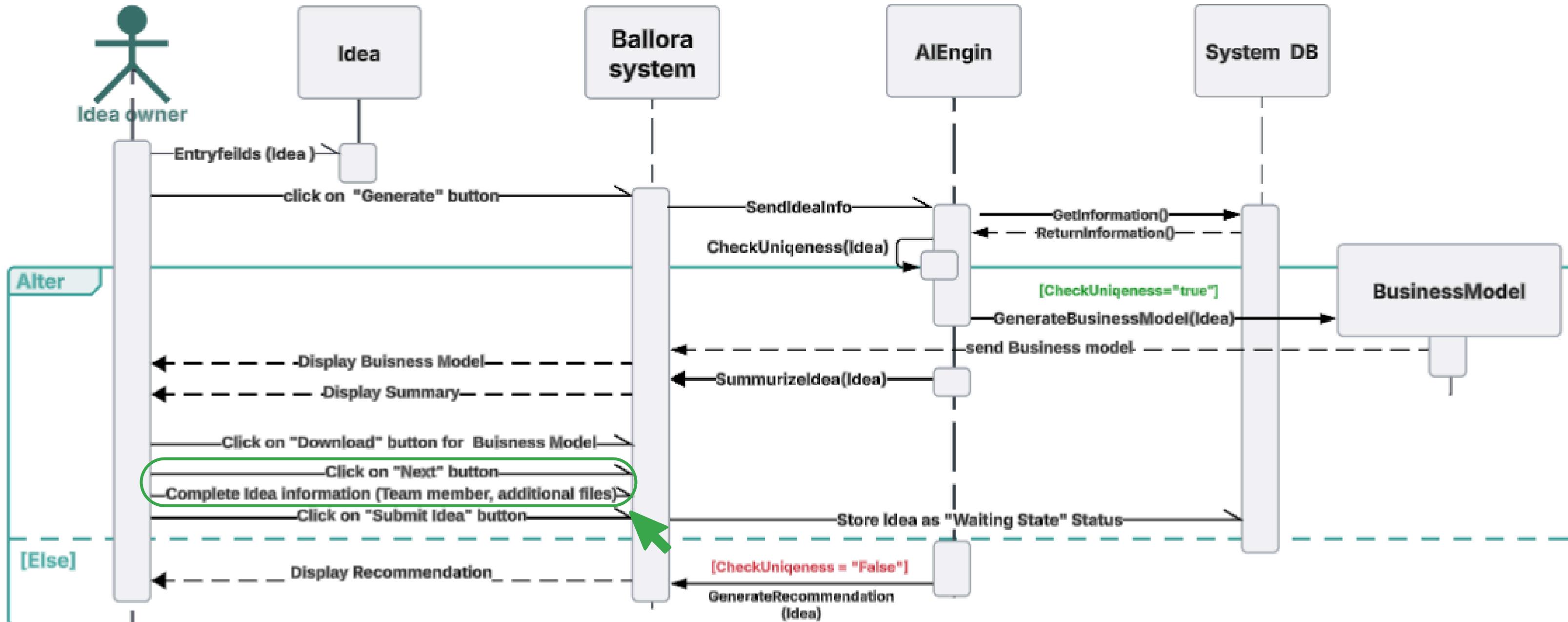


## BEFORE



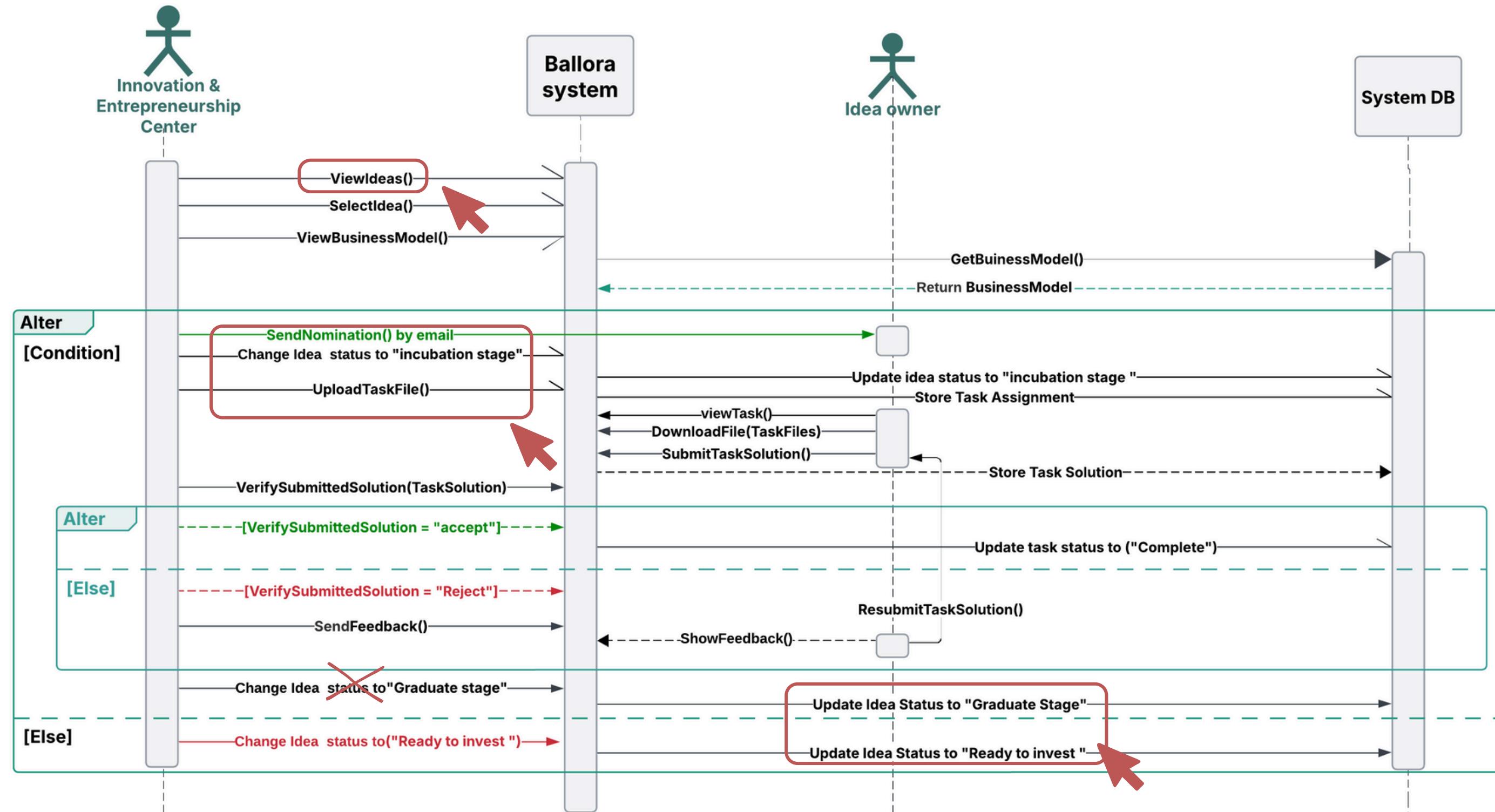


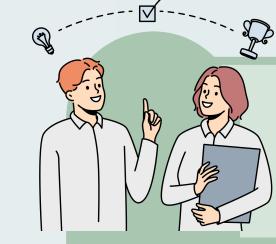
AFTER



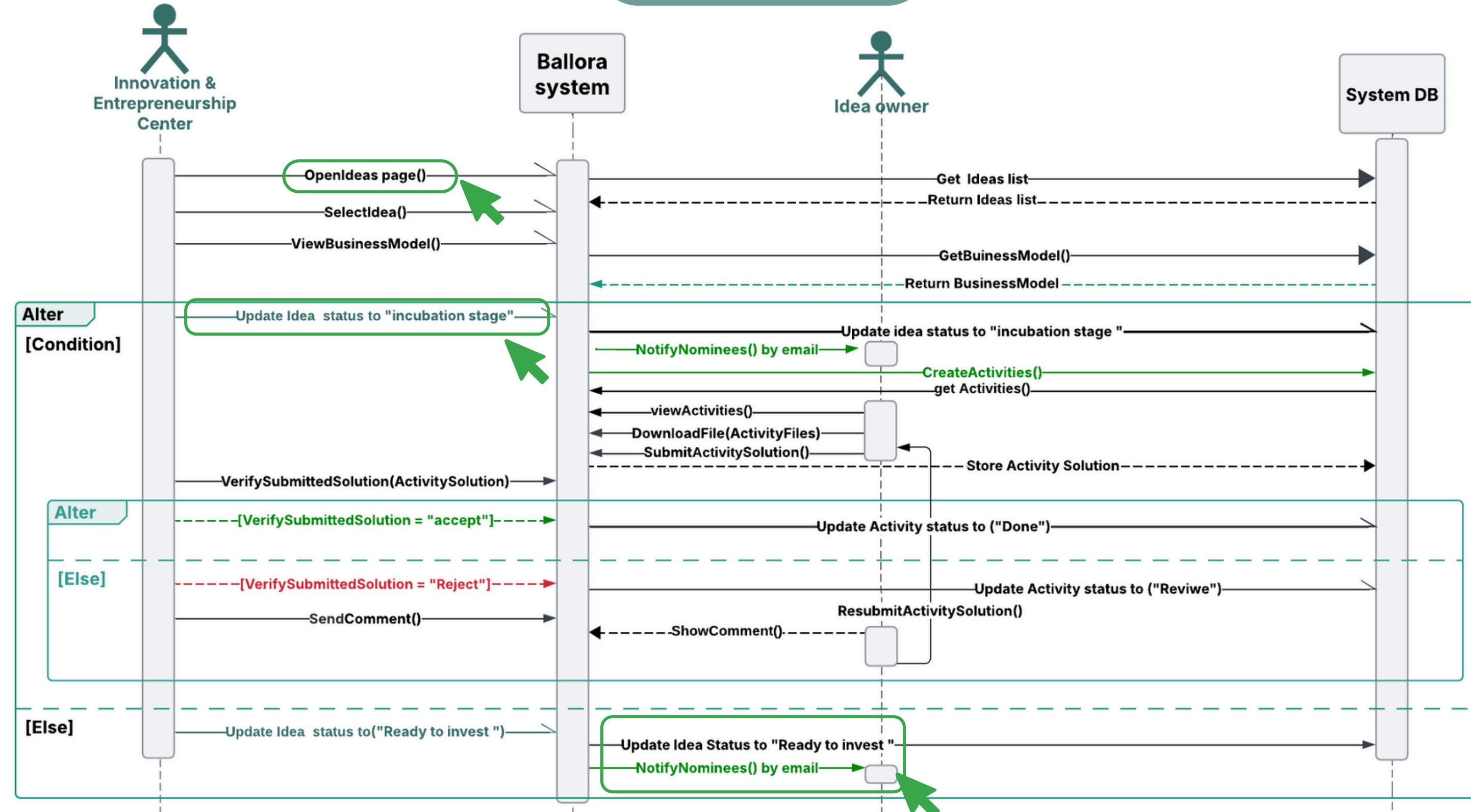


## BEFORE



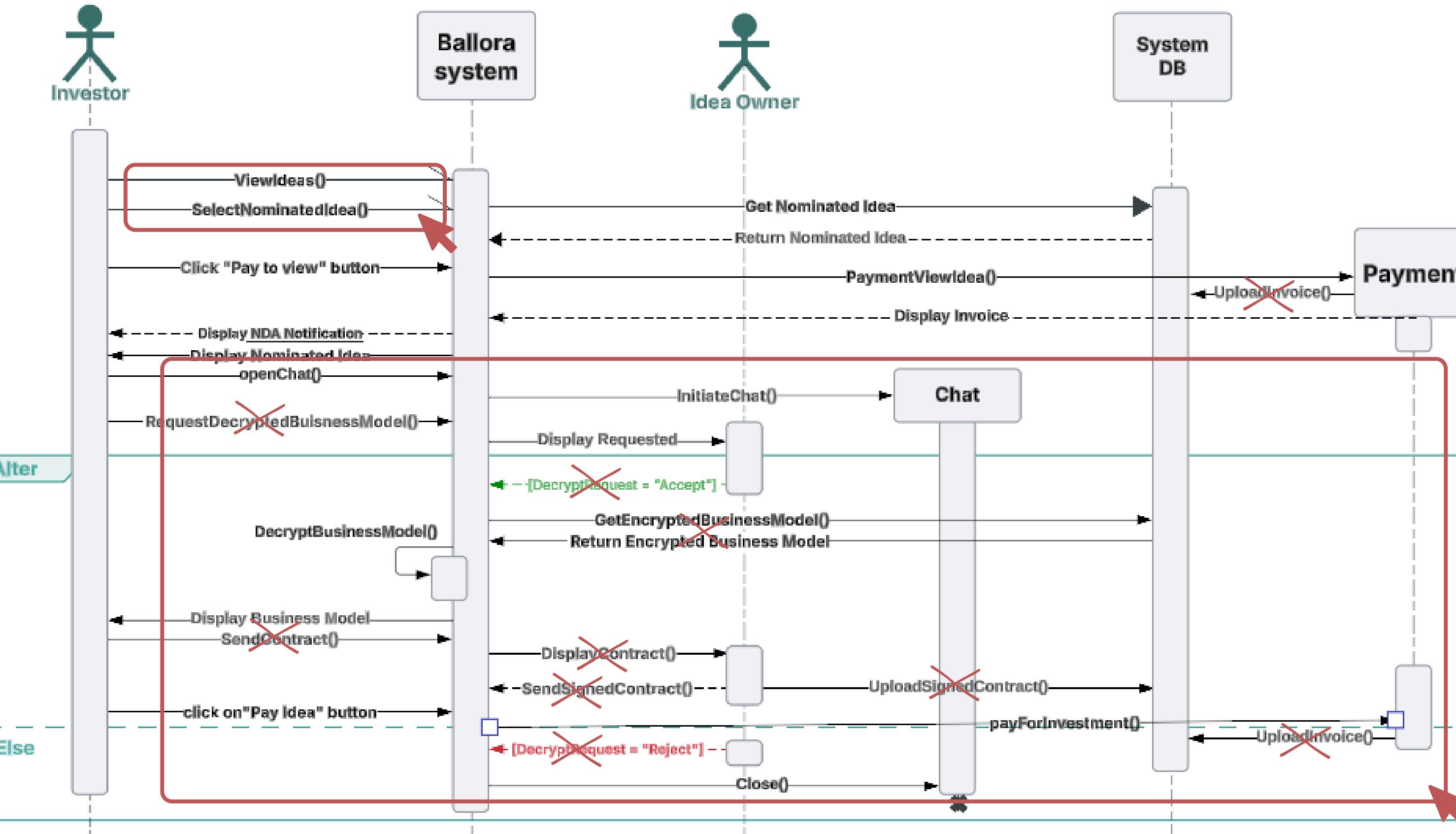


## AFTER



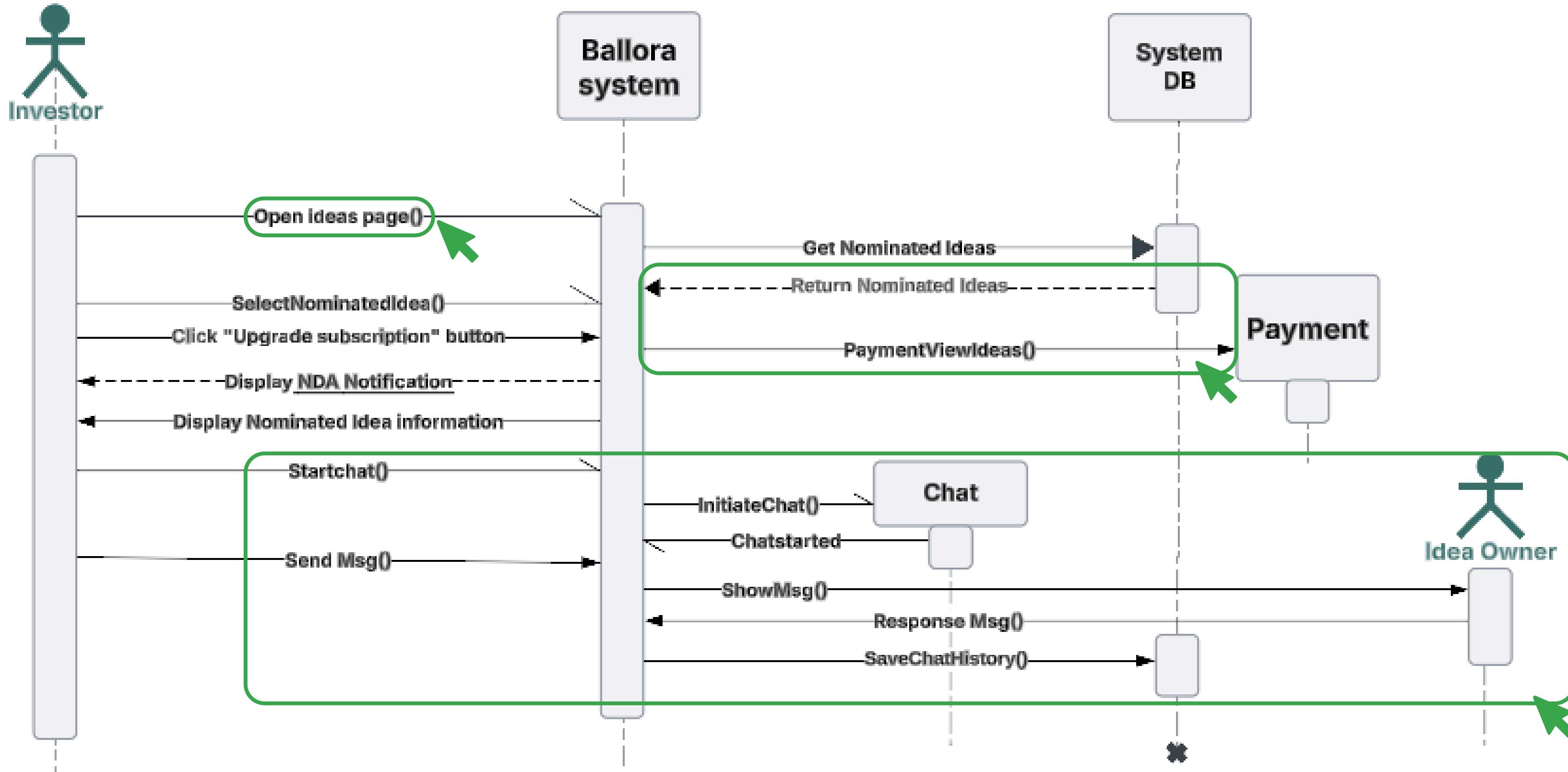


## BEFORE

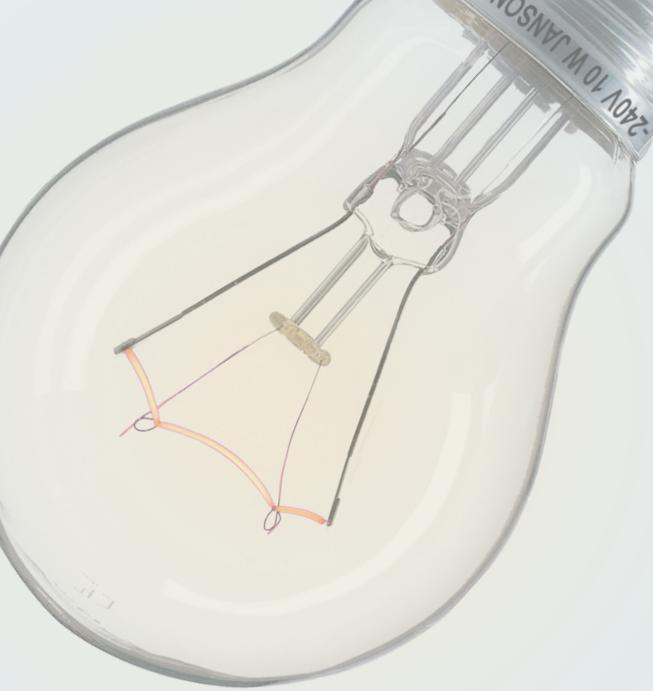




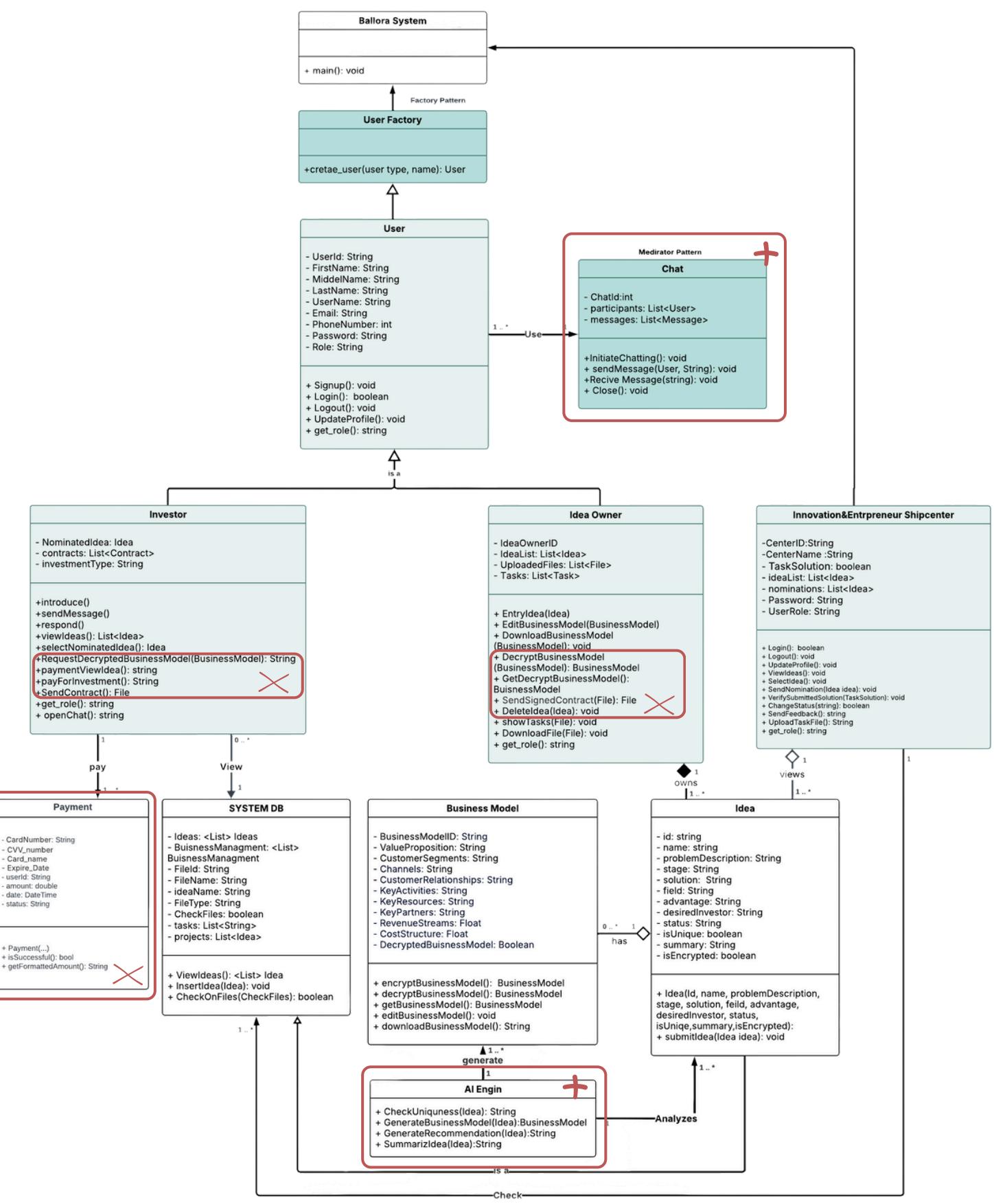
AFTER



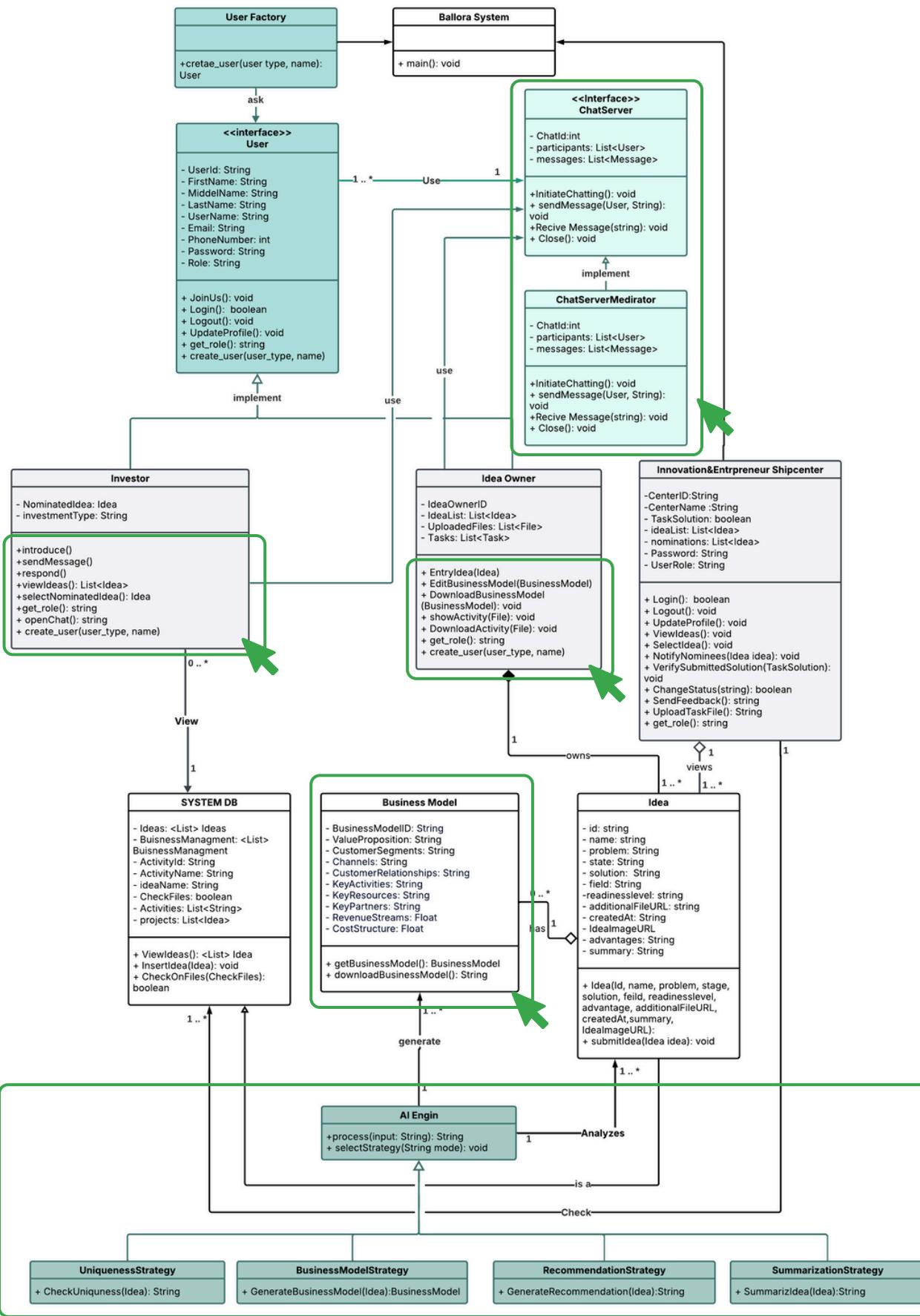
# CLASS DIAGRAM



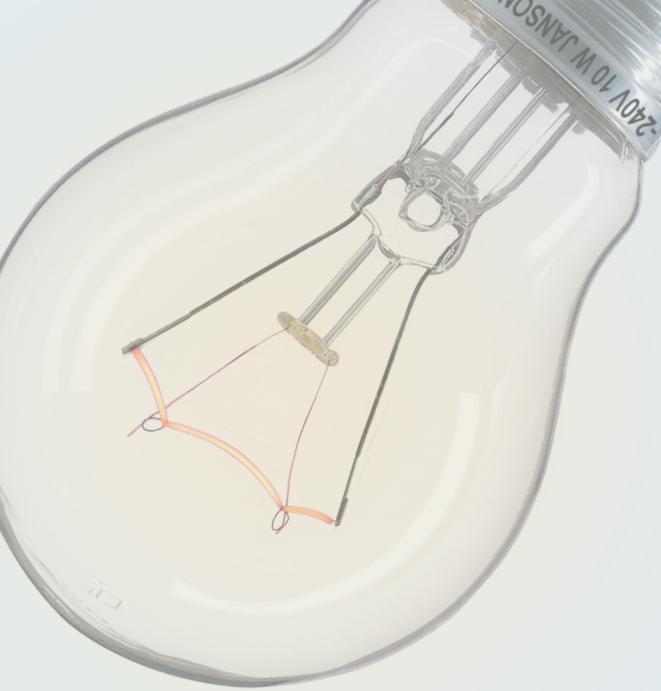
# BEFORE



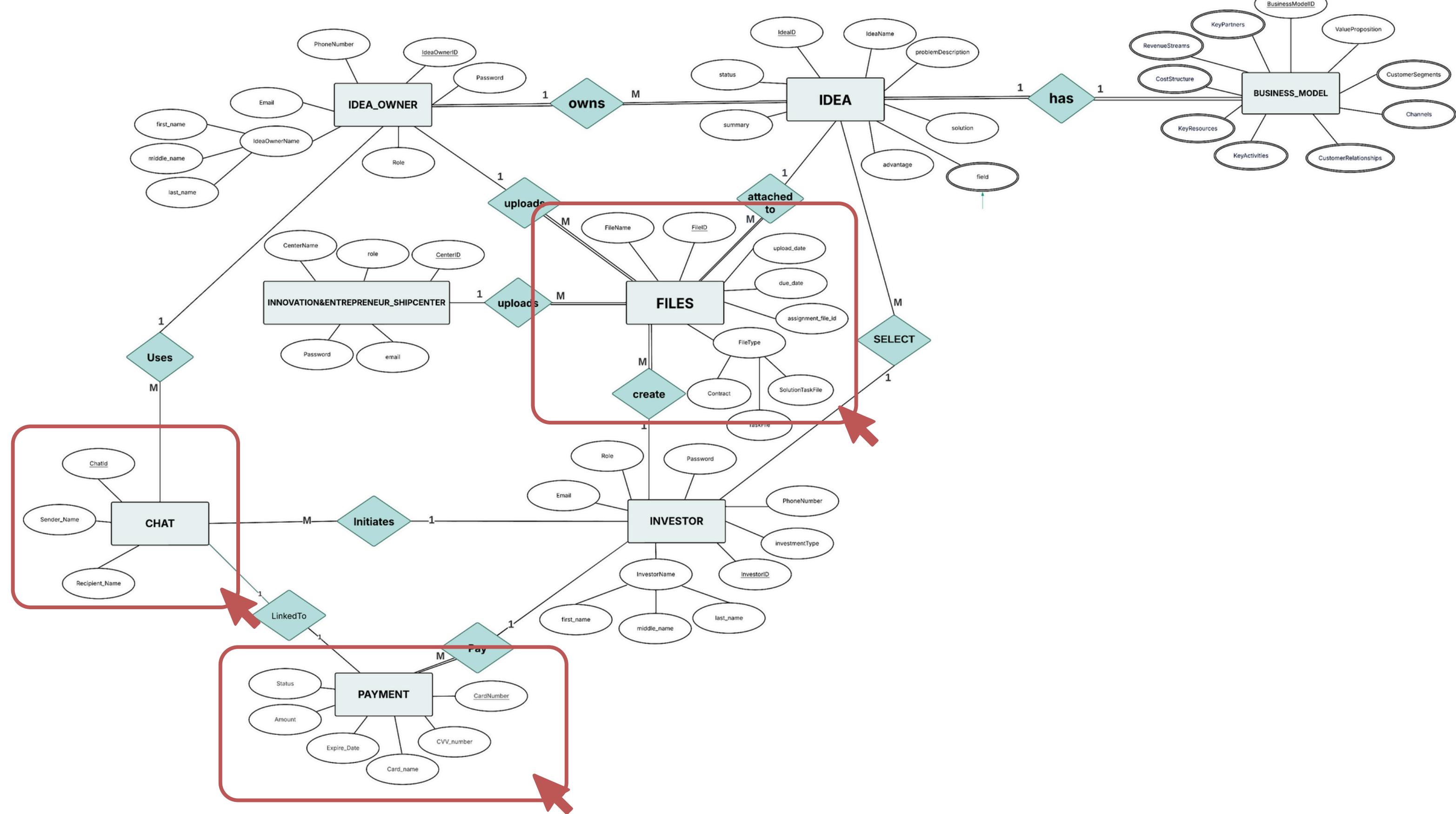
# AFTER



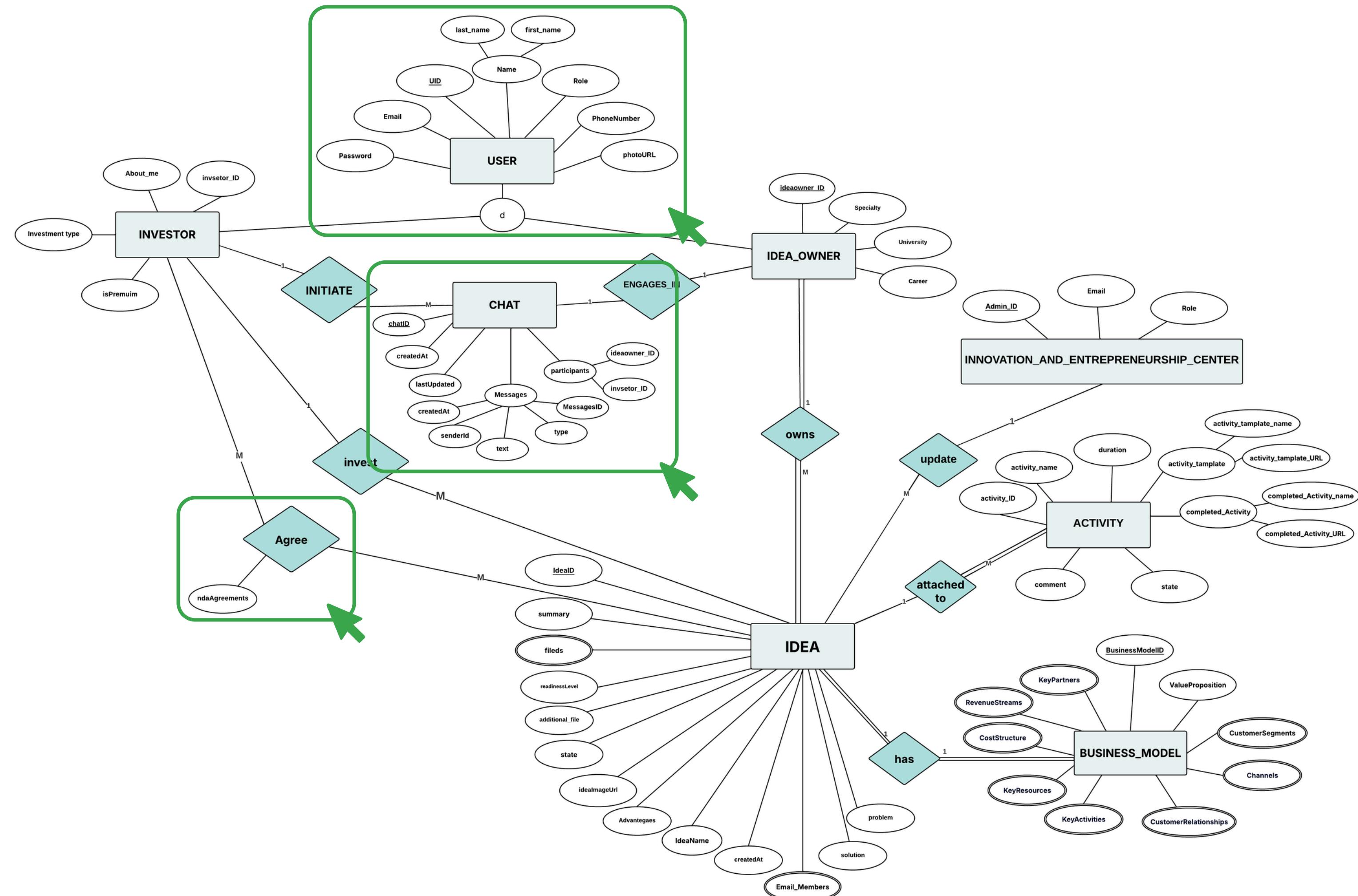
# ER DIAGRAM



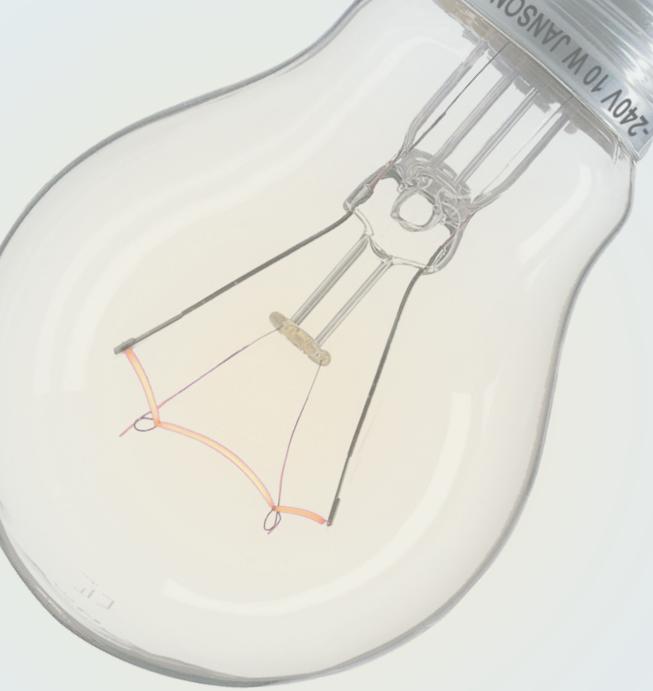
## BEFORE



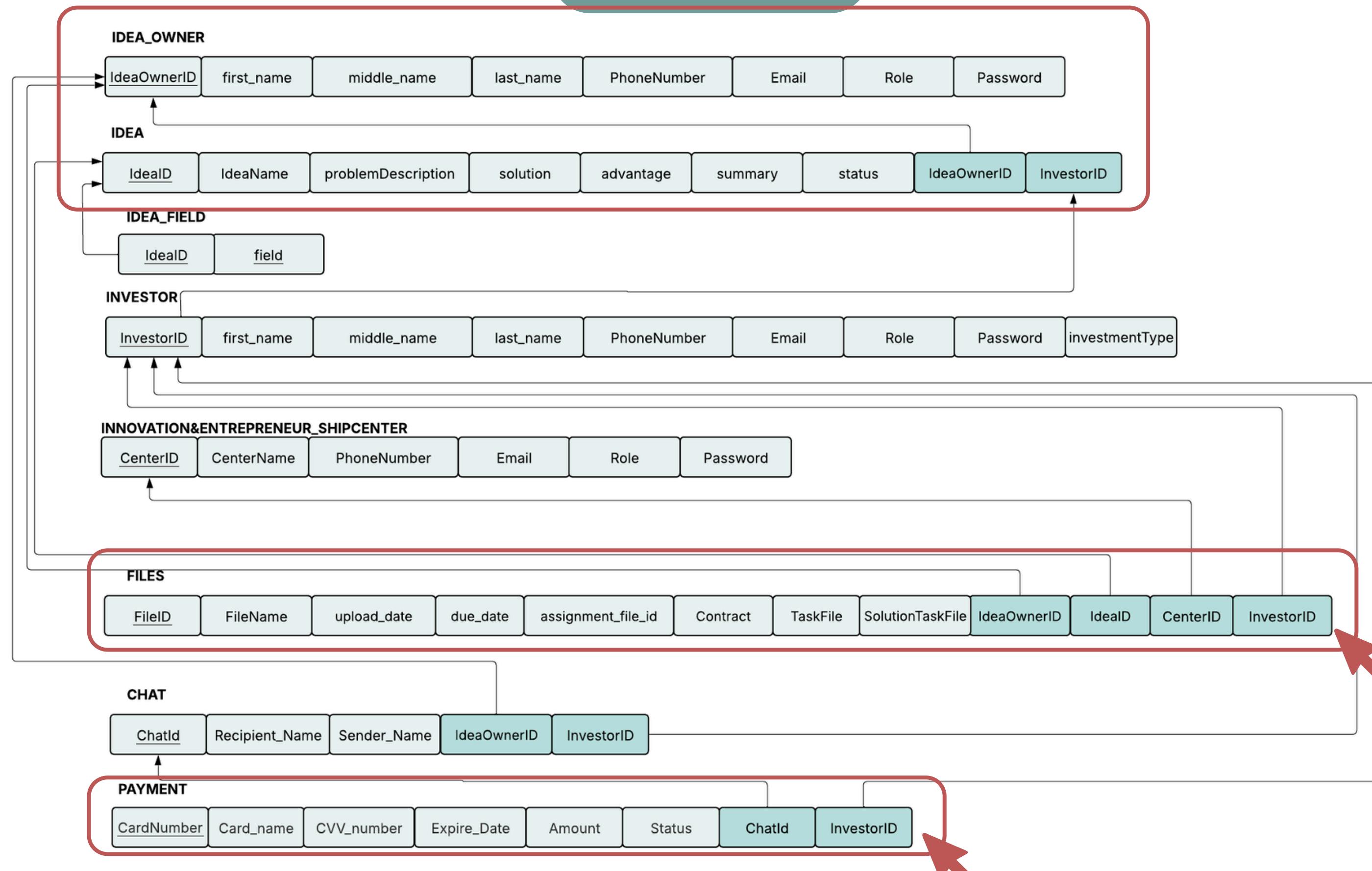
AFTER



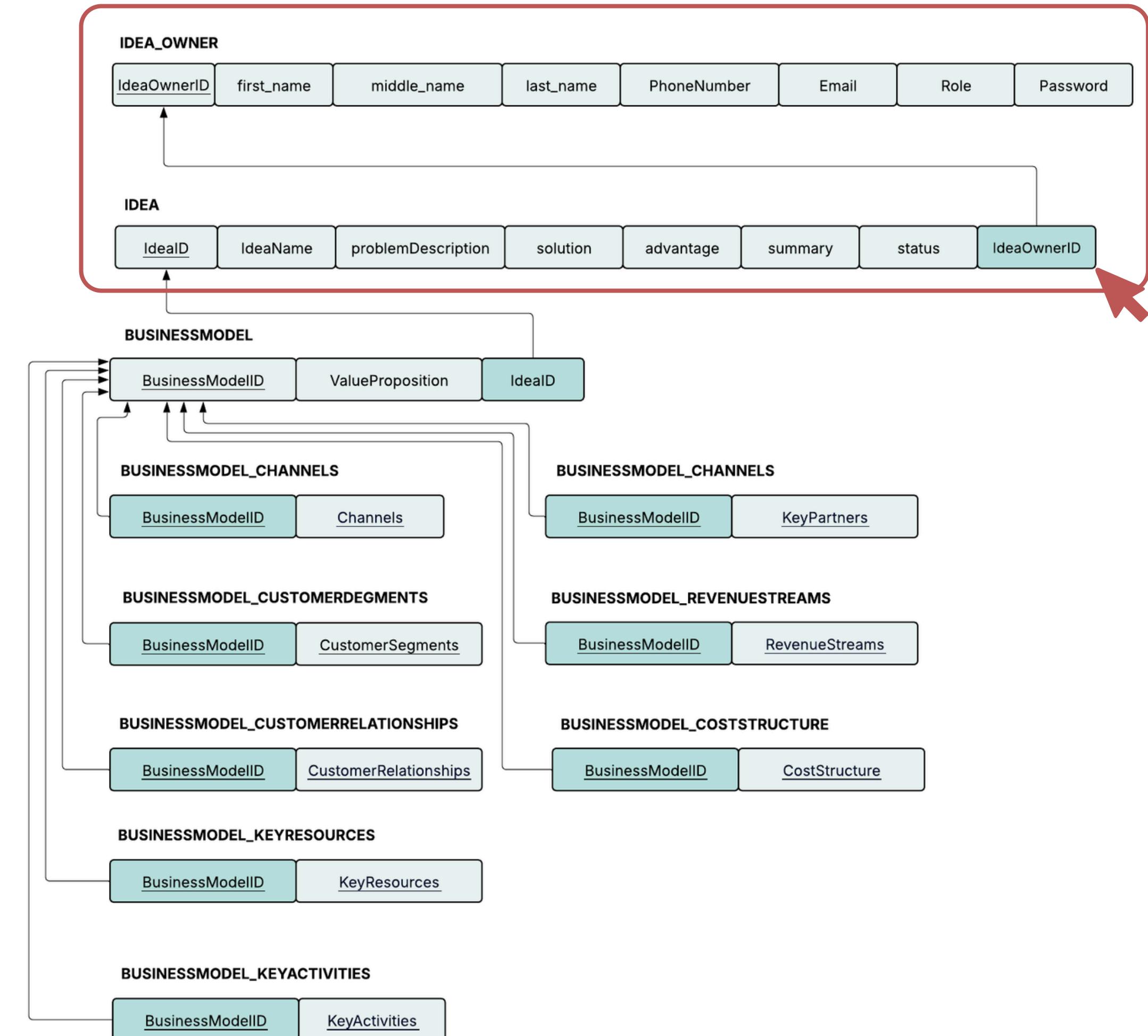
# NORMALIZATIO ER DIAGRAM



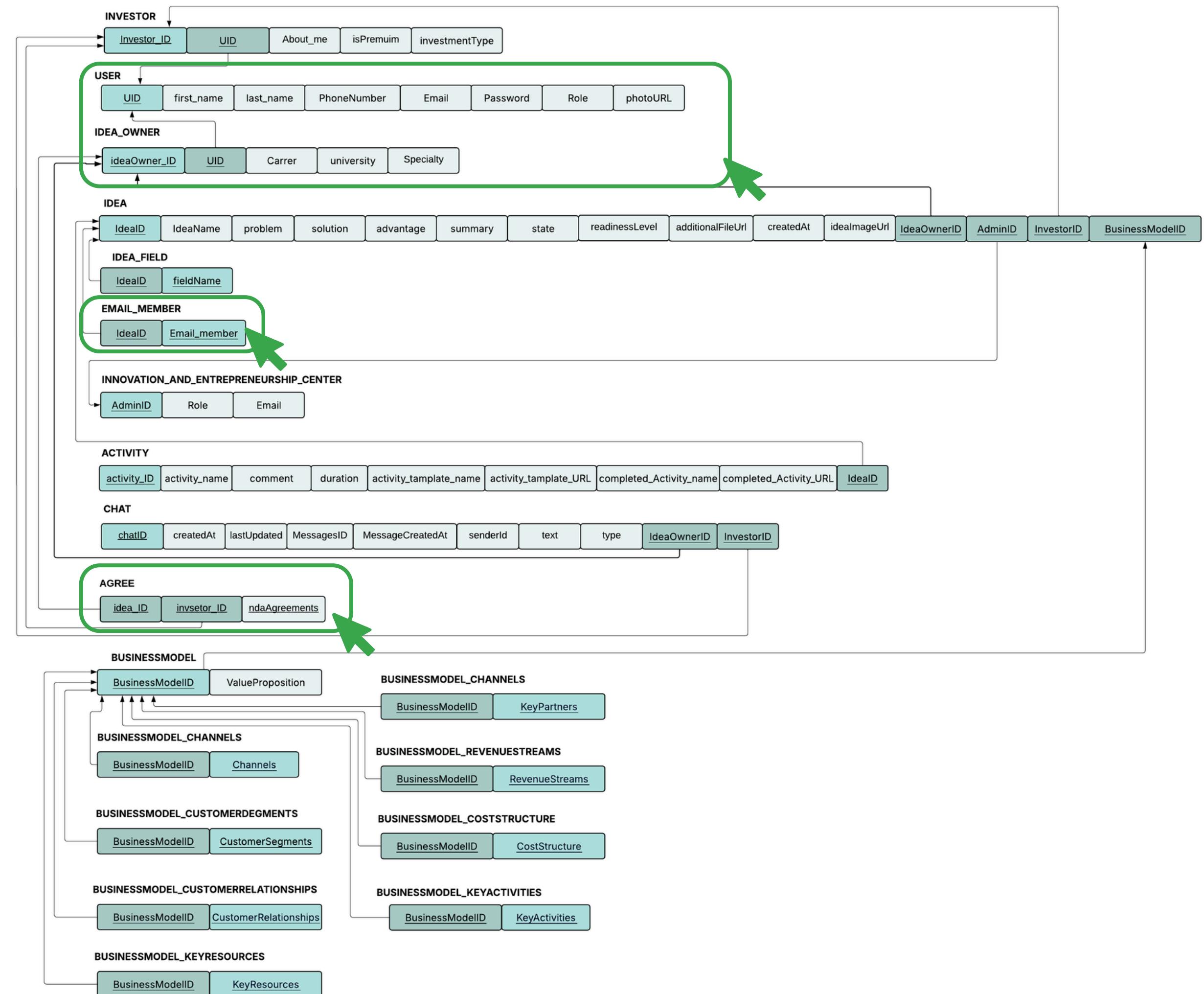
## BEFORE



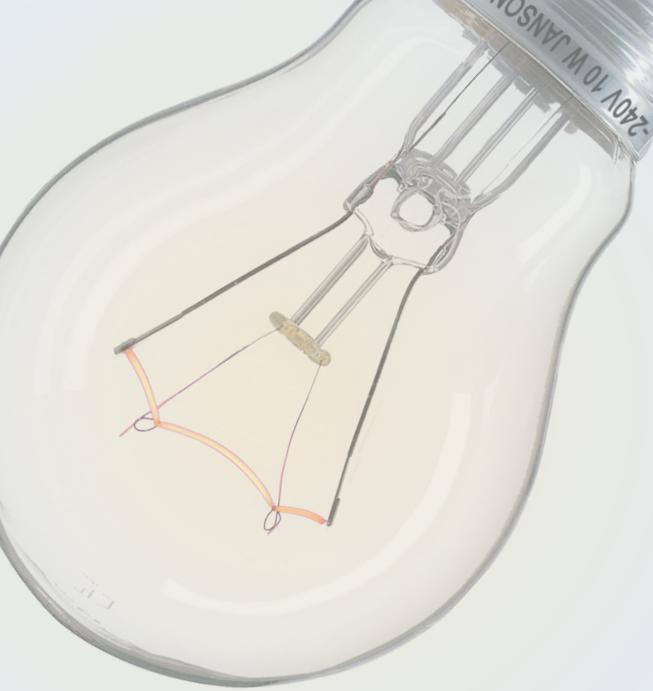
**BEFORE**



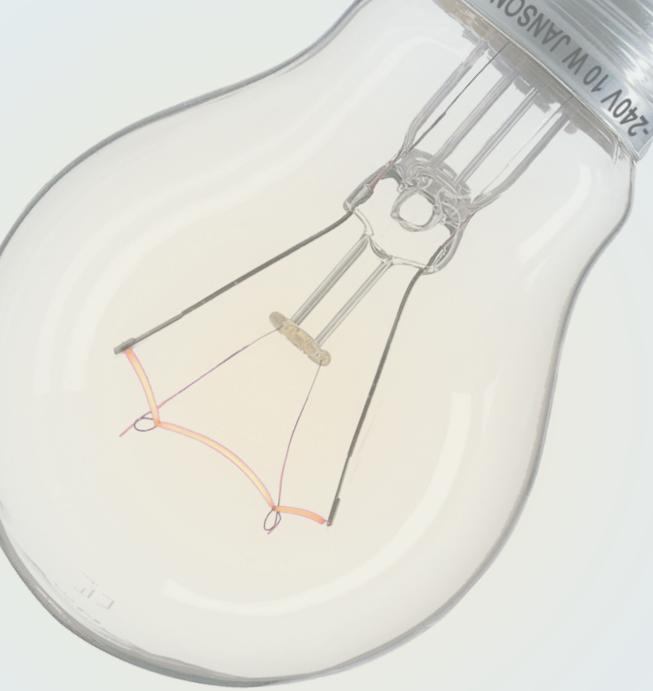
# AFTER



# TESTING



# UNIT TESTING



# ADD IDEA

## VALIDATION ERRORS ON FIELDS EMPTY



IDEA OWNER

```
// TEST 1 - ALL FIELDS EMPTY > All errors appear

test("Shows correct validation errors when ALL fields are empty", async () => {
  const user = userEvent.setup();
  renderForm();

  const generateBtn = screen.getByRole("button", { name: /generate/i });
  await user.click(generateBtn);

  expect(screen.getByText("Idea name is required.")).toBeInTheDocument();
  expect(screen.getByText("Problem is required.")).toBeInTheDocument();
  expect(screen.getByText("Solution is required.")).toBeInTheDocument();
  expect(
    screen.getByText("Competitive advantage is required.")
  ).toBeInTheDocument();
  expect(screen.getByText("Readiness level is required.")).toBeInTheDocument();
  expect(
    screen.getByText("Please select at least one field.")
  ).toBeInTheDocument();

  expect(mockAddIdea).not.toHaveBeenCalled();
});
```

# ADD IDEA

## SUCCESSFULLY PASSES VALIDATION



IDEA OWNER

```
// TEST 3 – ALL FIELDS VALID > No errors
test("Form submits (passes validation) when ALL FIELDS are valid", async () => {
  const user = userEvent.setup();
  renderForm();

  // Valid values
  await user.type(
    screen.getByPlaceholderText("Idea Name"),
    "Smart AI Assistant"
  );

  await user.type(
    screen.getByPlaceholderText("Brief Description Of The Problem"),
    "This describes the main problem clearly and concisely."
  );

  await user.type(
    screen.getByPlaceholderText(
      "Brief Summary of Proposed Solution (30 Words)"
    ),
    "A well-structured AI system that solves this issue in a scalable way."
  );

  // Should NOT show any error message
  expect(screen.queryByText(/required/i)).not.toBeInTheDocument();
  expect(screen.queryByText(/must not exceed/i)).not.toBeInTheDocument();
  expect(mockAddIdea).not.toHaveBeenCalled();
});
```

```
await user.type(
  screen.getByPlaceholderText("Advantages"),
  "Fast, accurate, and scalable solution."
);

// Select readiness level
await user.click(screen.getText("Select Level"));
await user.click(await screen.findByText("Prototype"));

// Select a field
await user.click(screen.getAllByRole("checkbox")[0]);

const generateBtn = screen.getByRole("button", { name: /generate/i });
await user.click(generateBtn);

// Should NOT show any error message
expect(screen.queryByText(/required/i)).not.toBeInTheDocument();
expect(screen.queryByText(/must not exceed/i)).not.toBeInTheDocument();
expect(mockAddIdea).not.toHaveBeenCalled();
});
```

## UPLOAD AND REVIEW ACTIVITY

```
// Test 1 - User uploads a file → onFileUpload is called
test("Triggers onFileUpload when the user selects a file", () => {
  const mockUpload = vi.fn();

  const activities = [
    {
      id: "A1",
      taskName: "Activity 1",
      duration: 2,
      state: "Waiting",
      uploadedFile: null,
      comment: null,
      templateFile: { name: "Template.pdf", url: "#" },
    },
  ];
  renderOwner(activities, mockUpload);

  const fileInput = document.querySelector('input[type="file"]');
  const fakeFile = new File(["dummy"], "test.pdf", { type: "application/pdf" });

  fireEvent.change(fileInput!, { target: { files: [fakeFile] } });

  expect(mockUpload).toHaveBeenCalledTimes(1);
  expect(mockUpload.mock.calls[0][0]).toBe(0);
  expect(mockUpload.mock.calls[0][1].name).toBe("test.pdf");
});
```

## FILE UPLOAD TRIGGER BEHAVIOR



INNOVATION &  
ENTREPRENEURSHIP CENTER



IDEA OWNER

```
// TEST 1 - TEXT MESSAGE
test("Sends TEXT message correctly", async () => {
  await sendMessageLogic(
    mockUser,
    conversationId,
    "text",
    { text: "Hello" }
  );

  expect(mockAddDoc).toHaveBeenCalledWith(
    "MSG_COLLECTION_REF",
    expect.objectContaining({
      senderId: "USER123",
      type: "text",
      text: "Hello",
      createdAt: "SERVER_TIME",
    })
);
});
```

## SENDING TEXT MESSAGE LOGIC TEST



INVESTOR

```
expect(mockUpdateDoc).toHaveBeenCalledWith(
  "DOC_REF",
  expect.objectContaining({
    lastMessage: "Hello",
    lastUpdated: "SERVER_TIME",
  })
);
});
```

### TESTING UPDATE STATE (INCUBATION)



INNOVATION &  
ENTRNEURSHIPCENTER

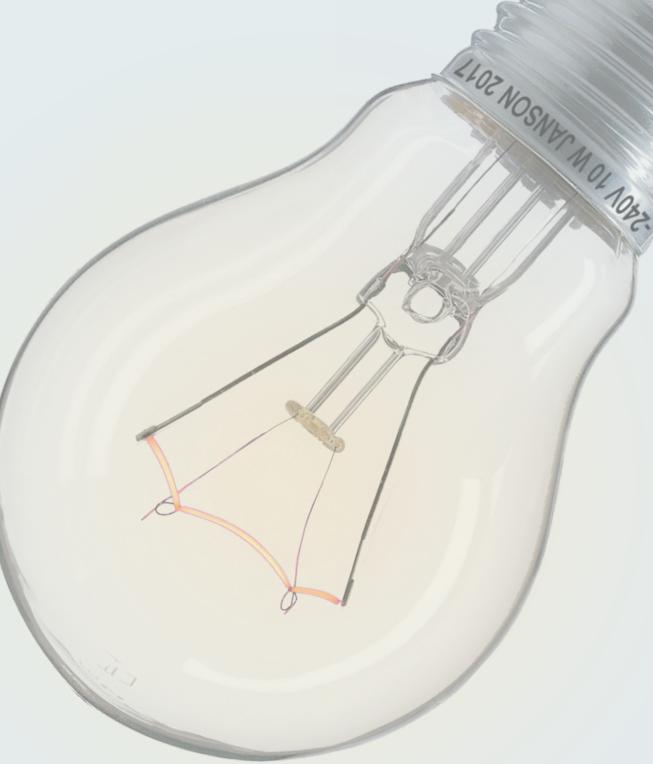
```
test("Case-2: Incubation state shows only 'Ready To Invest'", async () => {
  renderWithState("Incubation");

  const dropdownLabel = await screen.findByText("Select Idea State");
  fireEvent.click(dropdownLabel);

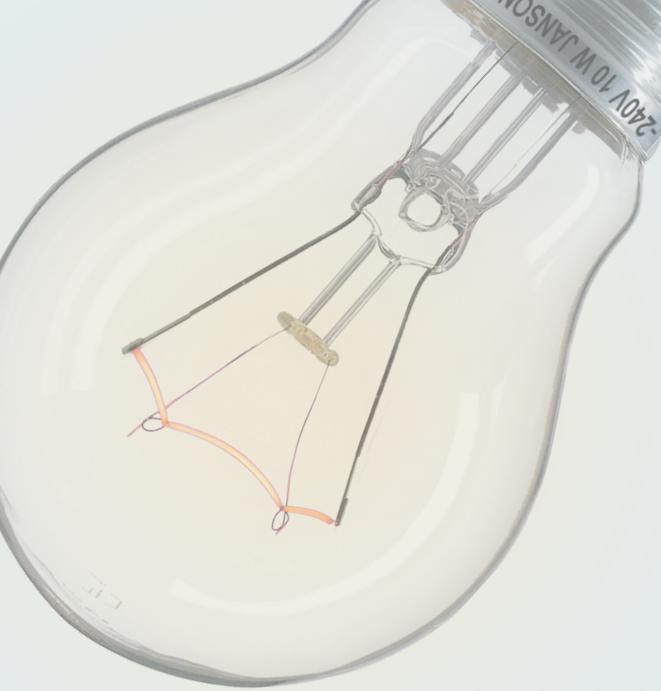
  expect(screen.queryByText("Incubation state")).not.toBeInTheDocument();
  expect(screen.getByText("Ready To Invest state")).toBeInTheDocument();
});
```



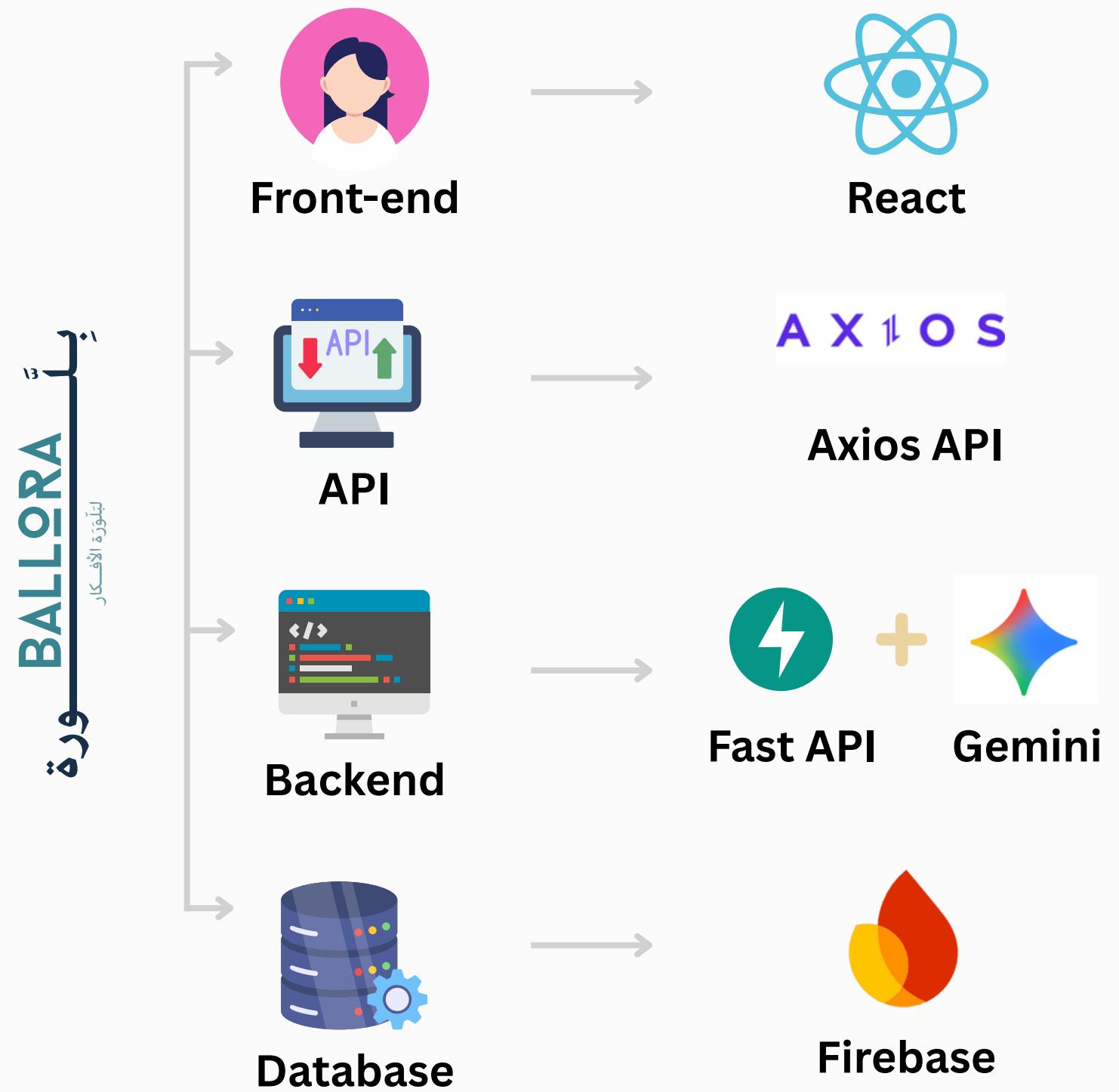
**Afnan  
Farhat**



# INTEGRATION TESTING



## PROCESSES



## TOOLS

-  **MSW (Mock Service Worker):** simulate backend
-  **Axios:** send real requests from frontend components
-  **Jest + Testing Library:** run integration tests

## MAIN SCENARIOS TESTED

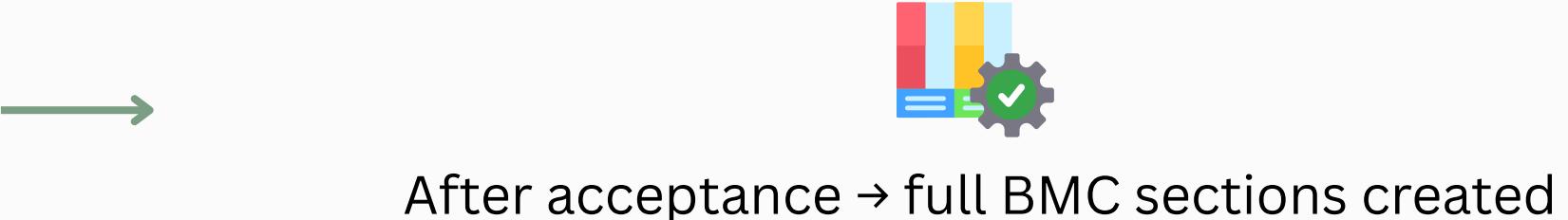
## 01 Unique Idea Submission



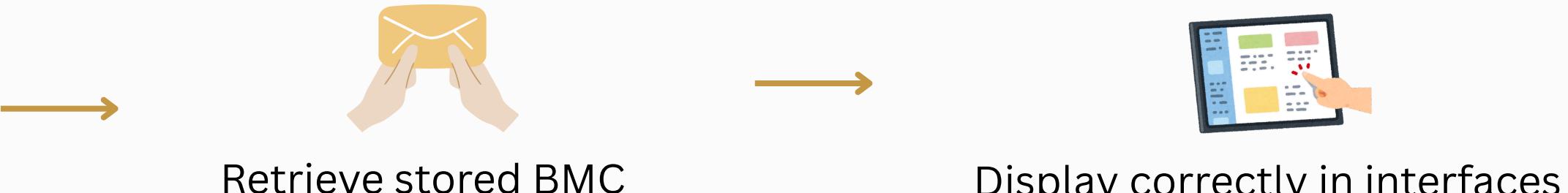
## 02 Non-Unique Idea Submission

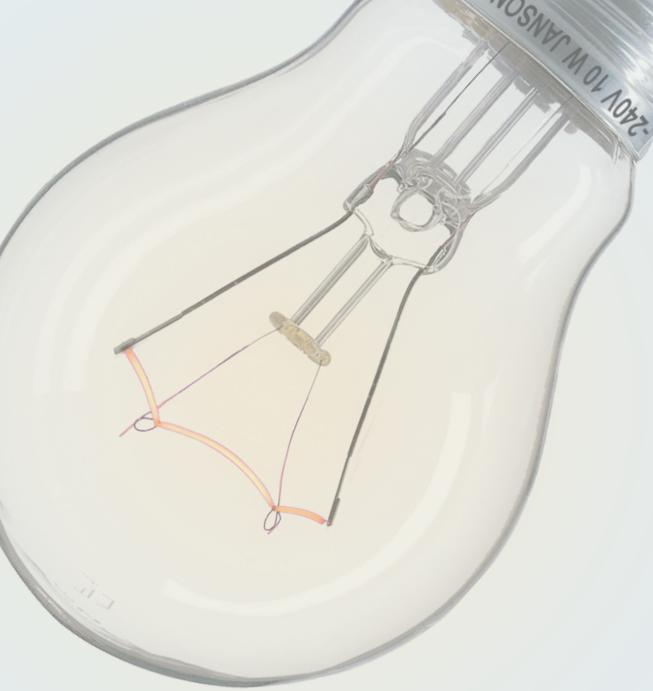


## 03 BMC Generation Workflow



## 04 View BMC (GET request)





# USABILITY TESTING



# TARGET USERS



**Idea owners:** 5 participants, each assigned 6 tasks



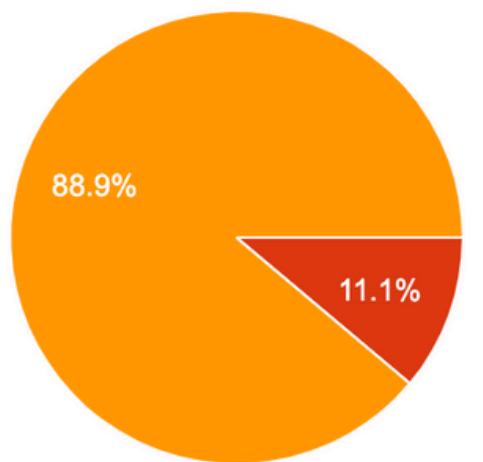
**Innovation & Entrepreneurship Centers:** 1 participants, each assigned 5 tasks



**Investors:** 3 participants, each assigned 5 tasks

?How satisfied are you with the navigation within the Ballora platform  
ما مدى رضاك عن التنقل داخل منصة بلورا؟

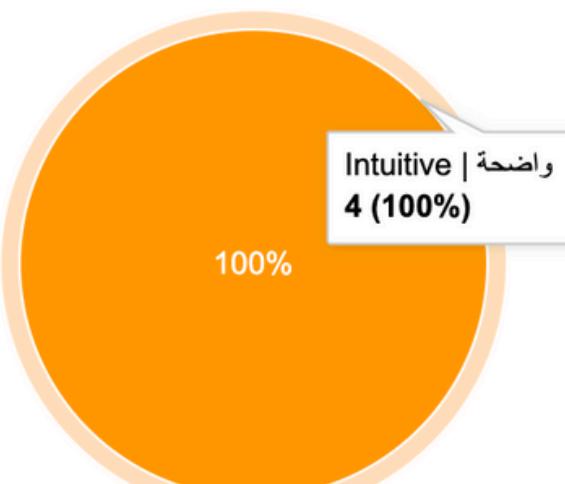
9 ردود



- غير راضٍ | Dissatisfied
- محايد | Neutral
- راضٍ | Satisfied

As Investor How smooth and intuitive was the process of contacting the idea owner  
كمستثمر ما مدى سهولة ووضوح عملية التواصل مع صاحب الفكرة؟

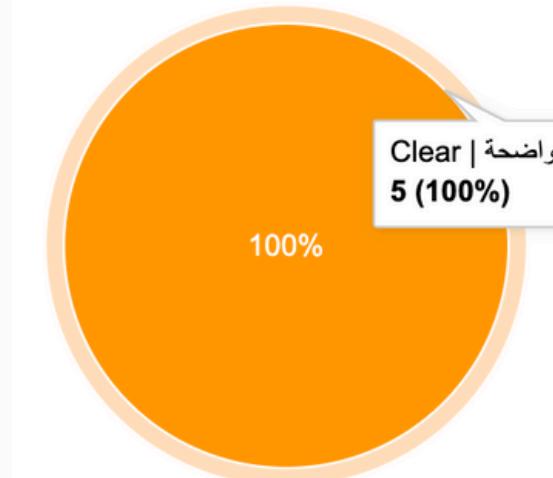
4 ردود



- غير واضحة | Unintuitive
- محايد | Neutral
- واضحة | Intuitive

As a idea owner How clear and helpful were the steps for adding your idea and generating a Business Model Canvas  
كمستخدم ما مدى وضوح وسهولة الخطوات لإضافة فكرتك وتوليد نموذج العمل التجاري؟

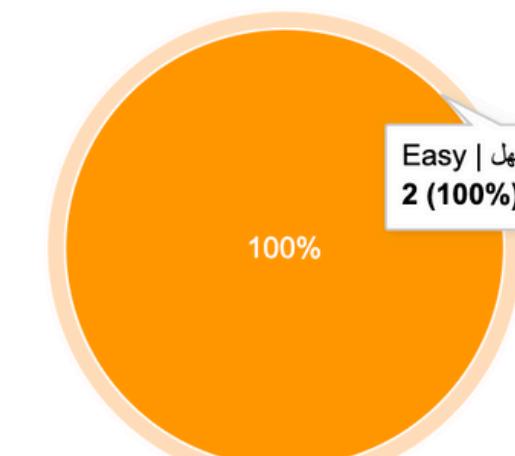
5 ردود



- غير واضحة | Unclear
- محايد | Neutral
- واضحة | Clear

As Entrepreneurship and creative center How easy was it to review submitted ideas and update their status (e.g., incubation, ready to invest)  
كمركز ابتكار وريادة اعمال مدى سهولة مراجعة الأفكار المقدمّة وتحديث حالتها (مثل: مرحلة الاحتضان، جاهزة للاستثمار)؟

ردان (2)

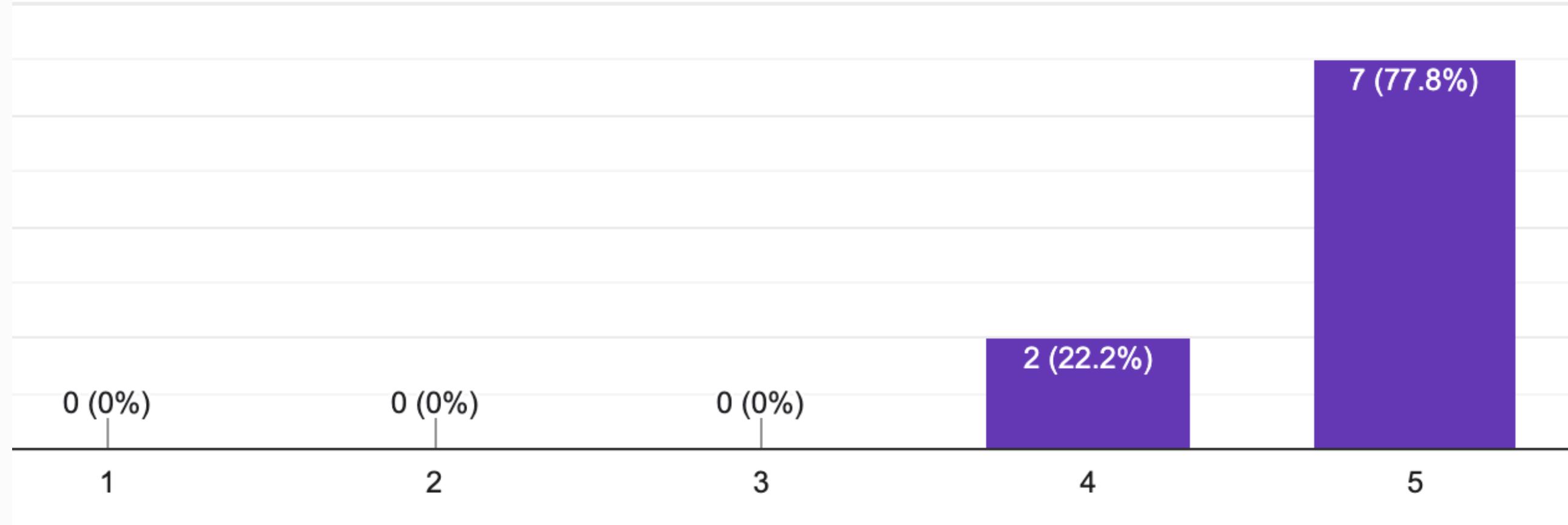


- صعب | Difficult
- محايد | Neutral
- سهل | Easy

On a scale from 1 to 5, how satisfied are you with your overall experience using the  
Ballora platform

على مقياس من 1 إلى 5، ما مدى رضاك عن تجربتك العامة في استخدام منصة بلورا؟

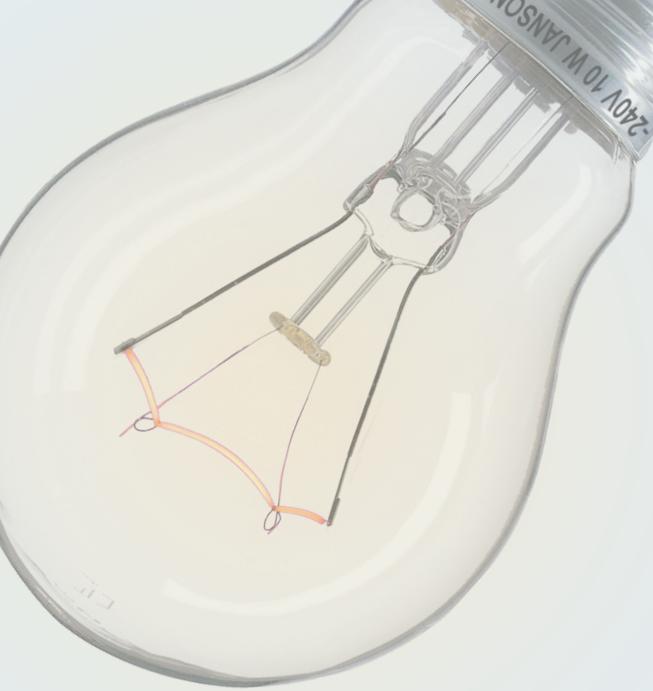
ردود 9





**Ghada  
Alshehri**

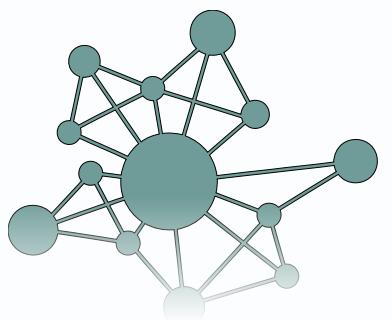




# LIMITATION & FUTURE WORK



# Limitations



## Limited Investor Network

01

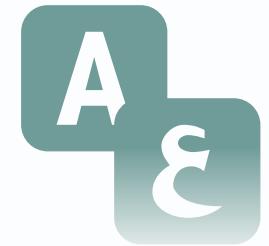
The platform did not reach a wide network of investors, which restricted its ability to fully support and promote investment opportunities.



## Absence of Automated Contract Generation

02

The platform does not provide automated investment contract generation, as this feature requires specialized legal expertise to ensure validity and compliance.



## No Arabic Language Support

03

Arabic support was not implemented due to the lack of high-quality Arabic datasets for training AI features, as well as the limited performance of generative AI models in Arabic.



## Lack of Full Cross-Device Responsiveness

04

The system is currently optimized for desktop use and is not fully responsive across all devices, which limits accessibility for users on mobile devices and tablets.

# FUTURE WORK

1



**Partner with Saudi university innovation centers.**

2



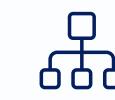
**Provide expert advisory and mentorship services for idea owners.**

3



**Use AI to auto-update the Business Model Canvas after incubation stages.**

4

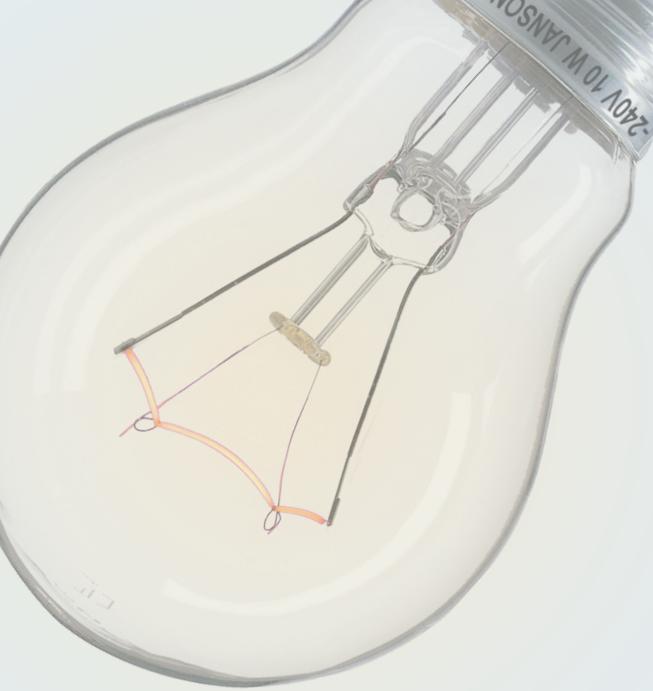


**Make Ballora fully responsive for all devices.**

5



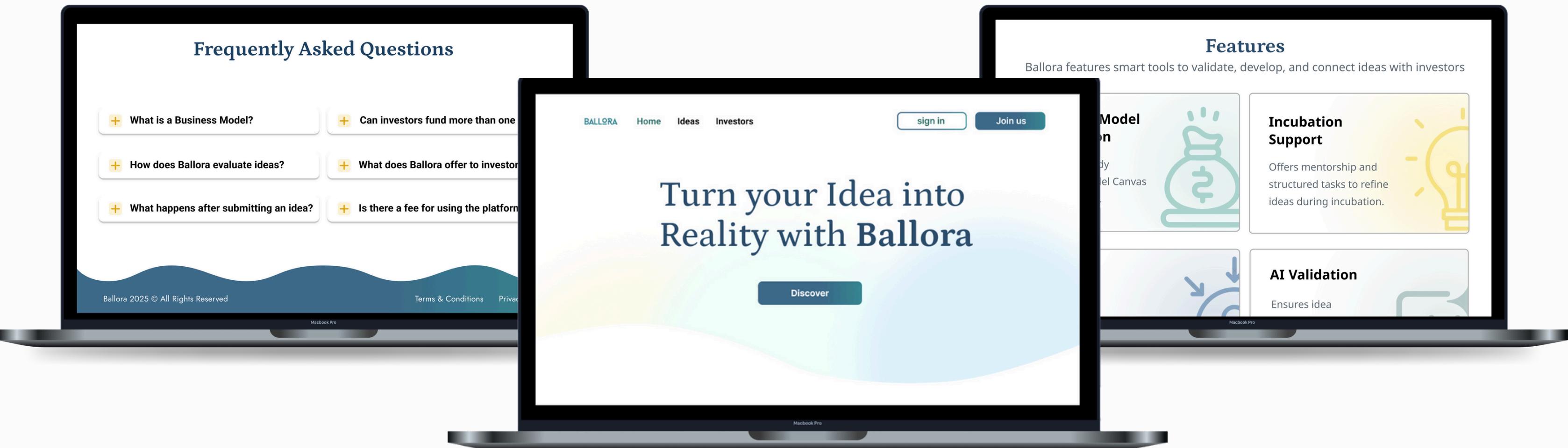
**Add advanced investor tools (contracts, legal guidance, negotiation support).**



# RESULT AND CONCLUSION



# LANDING INTERFACES



# IDEA OWNER INTERFACES

The image displays three devices (a desktop monitor, a laptop, and a smartphone) illustrating the process of idea ownership and validation.

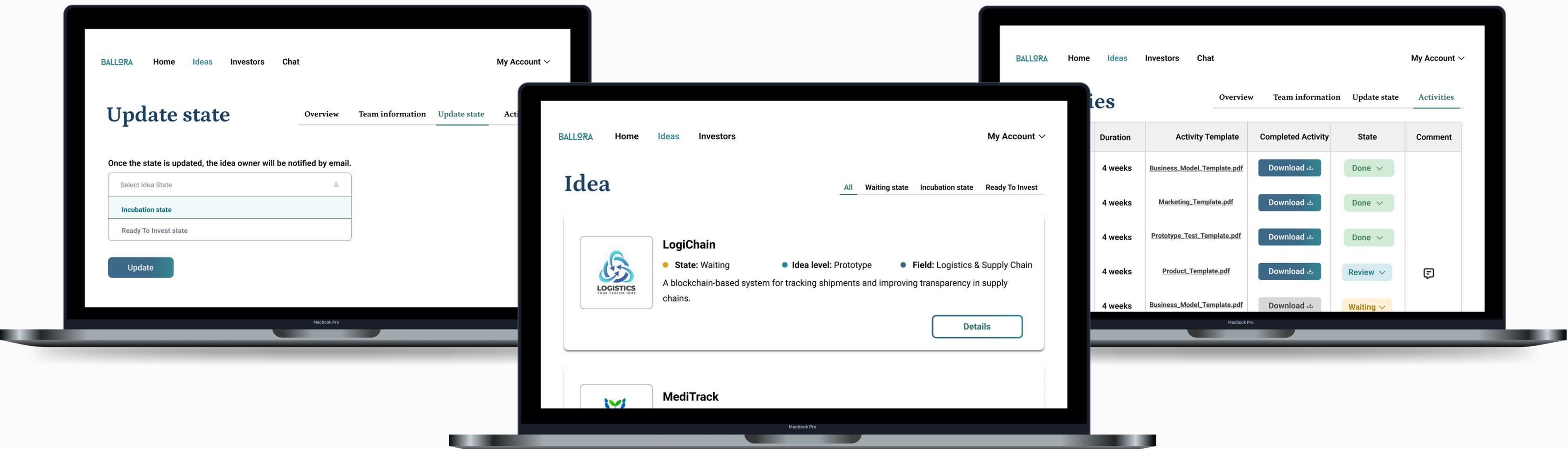
- Desktop Monitor:** Shows a detailed breakdown of an idea named "SmartTrack". It includes sections for Idea Name, Problem, Solution, Competitive advantage, and Idea Level (set to Idea). The Problem section describes the challenge of tracking daily essentials. The Solution section details the SmartTrack device. The Competitive advantage section highlights its IoT connectivity. The Idea Level dropdown is set to "Idea".
- Laptop:** Shows a summary of the "Smart Health Tracker" idea. It includes a brief description of the problem (monitoring health metrics), a solution (mobile app), and a note about AI-powered insights. A "My Account" dropdown is visible.
- Smartphone:** Shows the main "Ideas" screen with a large button to "Add your first idea to Start your journey". Below it, a note says "Tap here to open the form and the AI will generate your business model". A "Add Idea + " button is at the bottom.

# IDEA OWNER INTERFACES

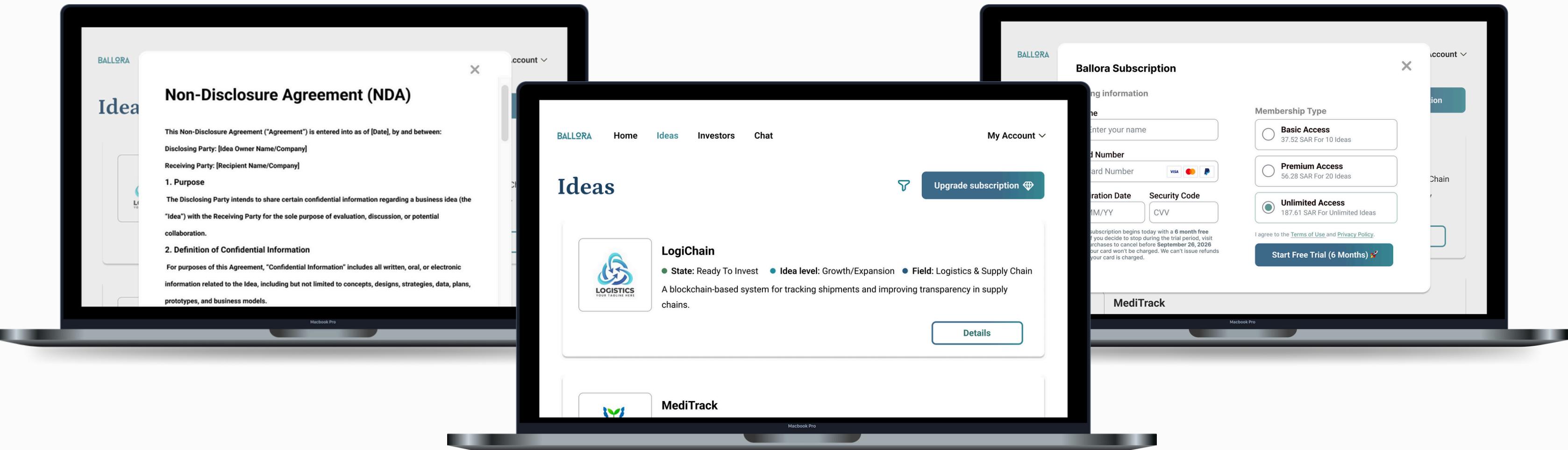
The image shows three MacBook Pro screens displaying different interfaces of the BALLORA platform:

- Left Screen (Activities):** Shows a table of activities with columns: Activity Name, Duration, Activity Template, Completed Activity, State, and Comments. Activities listed are Report 1 through Report 5, each taking 4 weeks and using a specific template. Statuses range from Done to Waiting.
- Middle Screen (Overview):** Displays an overview of a project titled "LogiChain". It includes a logo for "LOGISTICS YOUR TRADE HERE", a brief description of the platform's purpose (ensuring transparency and reducing fraud), and key metrics: State (Waiting), Idea level (Prototype), and Field (Logistics & Supply Chain).
- Right Screen (Team Information):** Shows a table of team members with columns: Member Name, Email, University, Career, Specialty, and Role. The team consists of 4 members: Afnan Farhat, Marya Fawaz, Ghada Alshehri, and Layyan Aljohani, all from KAU and working in Information Technology.

# CENTER INTERFACES



# INVESTOR INTERFACES

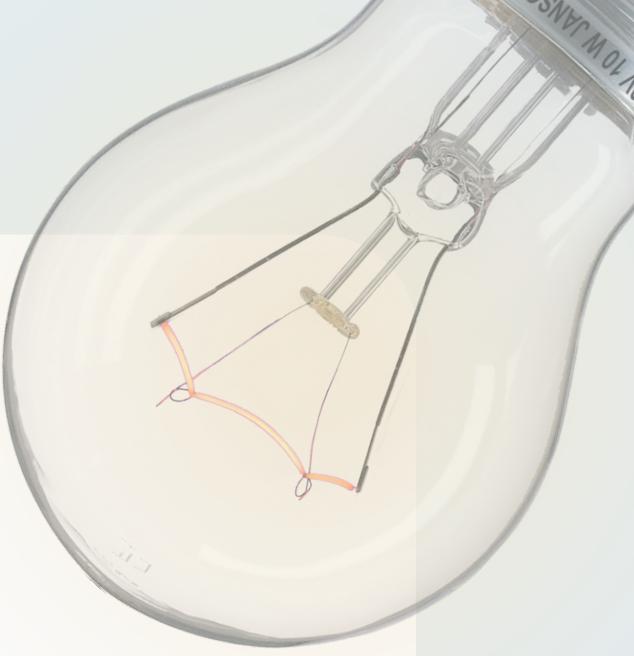


# INVESTOR INTERFACES

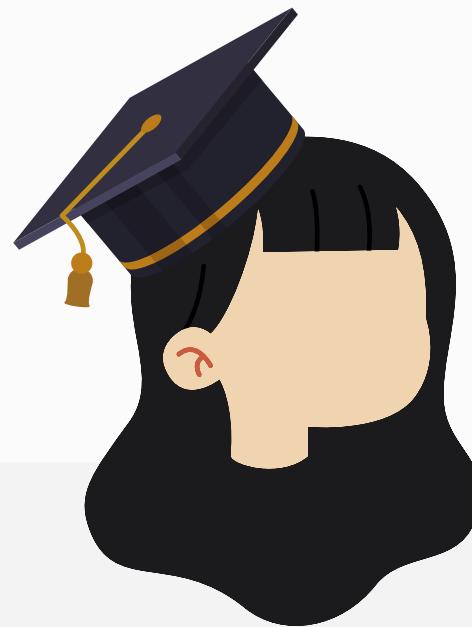
The image displays three separate screenshots of the BALLORA platform's investor interface, arranged vertically on a laptop screen.

- Top Left Screenshot:** Shows the "Investors" section. The header includes the BALLORA logo and navigation links: Home, Ideas, Investors (highlighted in blue), and Chat. Below the header, the title "Investors" is displayed. Four investor profiles are listed: David Carter (Angel Investor), Sara Carter (Angel Investor), Sophia Delgado (Seed Investor), and Omar Al-H (Venture Capitalist). Each profile includes a small profile picture and a "View Profile" button.
- Bottom Screenshot:** Shows the "Contact" section. The header includes the BALLORA logo and navigation links: Home, Ideas, Investors, and Chat. Below the header, the title "Contact" is displayed. It features tabs for "Overview", "Team information", and "Contact" (which is underlined, indicating it is active). A large call-to-action button labeled "Open Chatting" with a "Start" button is prominently displayed. Below this button, a text box reads: "Begin a conversation with the team leader to understand the concept, evaluate its growth potential."
- Top Right Screenshot:** Shows the "Chat" section. The header includes the BALLORA logo and navigation links: Home, Ideas, Investors, and Chat. Below the header, the title "Chat" is displayed. It shows a list of messages in a conversational interface. One message from "ahmed investor" says "Hi Investor". Another message from "You" says "Hi Investor". The timestamp for the last message is 11:59 PM.

# CONCLUSION

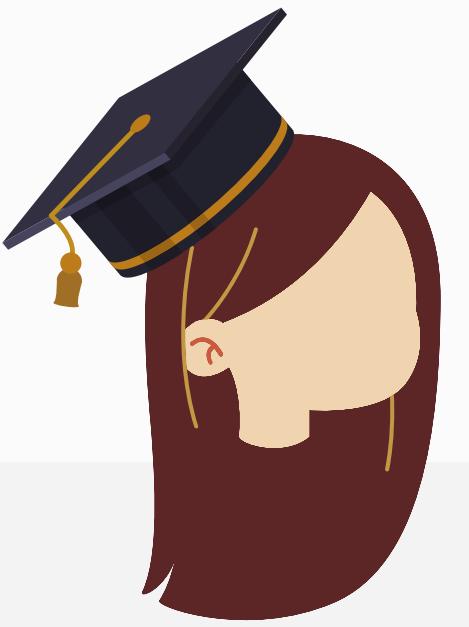


# TEAM INFORMATION



**Afnan Farhat**

2105973



**Ghada Alshehri**

2107427



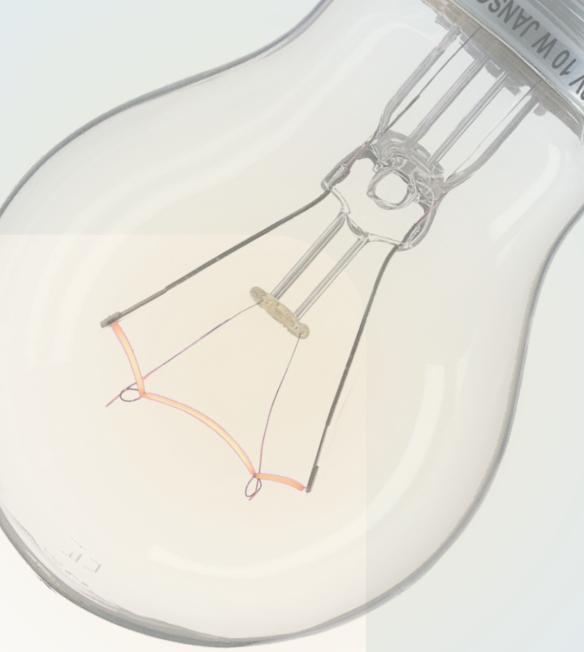
**Layan Aljohani**

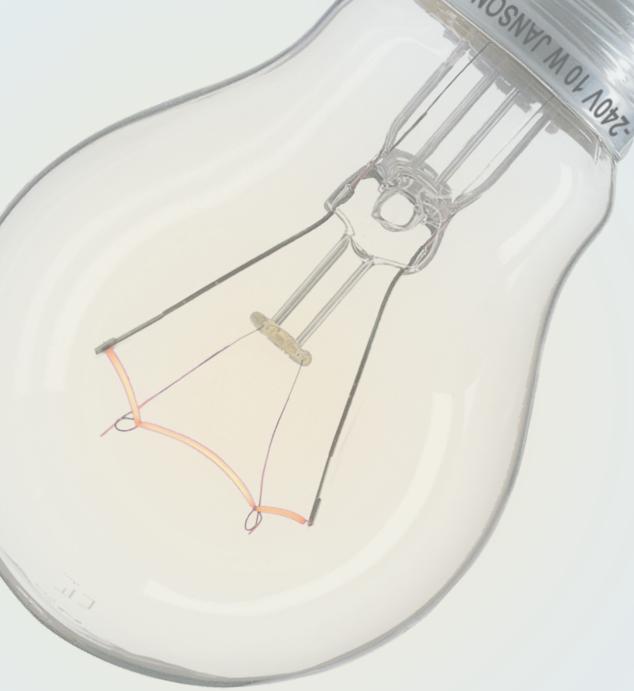
2108629



**Maryya Alkanani**

2129219



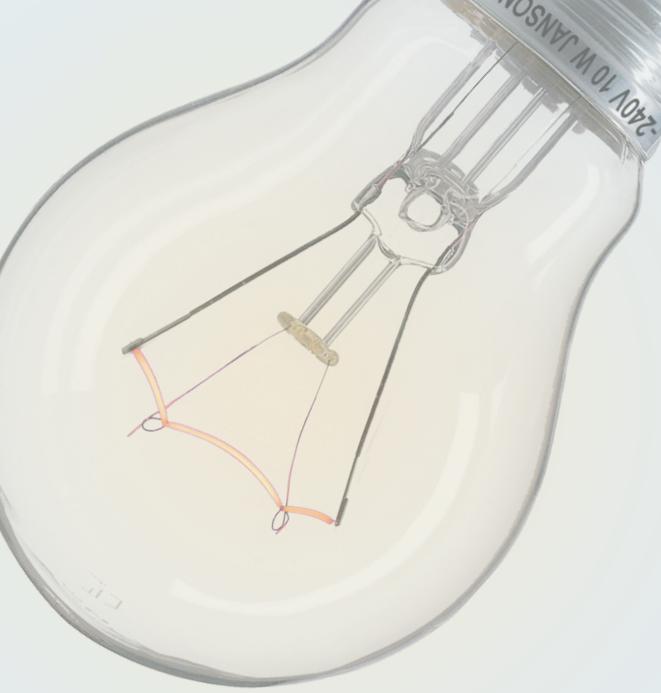


# THANK YOU

# ANY QUESTION?

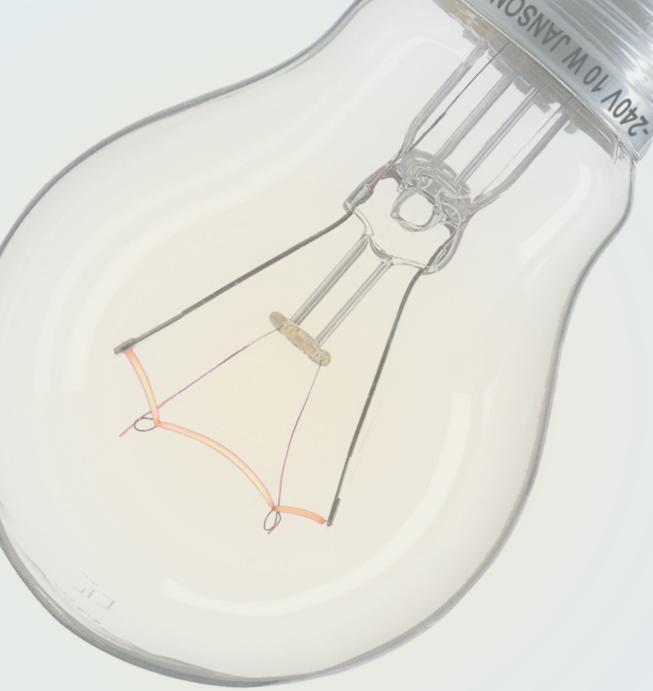


# APPENDIX



# BUSINESS MODEL

<p><b>الشراكات الرئيسية</b> Key Partners</p>  <ul style="list-style-type: none"> <li>مركز الابتكار وريادة الاعمال في جامعات السعودية</li> </ul>	<p><b>الأنشطة الرئيسية</b> Key Activities</p>  <ul style="list-style-type: none"> <li>تطوير موقع بلورة</li> <li>إنشاء نموذج الذكاء الاصطناعي في إختبار أصالة الفكرة</li> <li> وأنشاء نموذج عمل التجاري واختباره</li> <li>تسويق للتطبيق: لزيادةوعي وجدب المستخدمين وزيادة الداعمين</li> </ul>	<p><b>القيم المقترحة</b> Value Propositions</p>  <p>موقع شامل يدعم اصحاب الافكار في كل مرحلة من مراحل رحلتهم الريادية.</p> <p><b>استخدام الذكاء الاصطناعي في:</b></p> <ul style="list-style-type: none"> <li>التأكد من أصالة وتفرد الفكرة</li> <li>إنشاء نموذج عمل التجاري</li> <li>تقديم توصيات على الأفكار المرفوضة</li> </ul>	<p><b>العلاقات مع العملاء</b> Customer Relationship</p>  <ul style="list-style-type: none"> <li>خدمة العملاء المستمرة.</li> <li>عرض نماذج النجاح لضمان الاستمرارية فالمنصة.</li> </ul>	<p><b>شرائح العملاء</b> Customer Segments</p>  <p>طلاب وطالبات الجامعات السعودية الذين يمتلكون:</p> <ul style="list-style-type: none"> <li>أفكار ريادية</li> <li>مشاريع التخرج ريادية</li> </ul> <p><b>المستثمر</b></p>
<p><b>هيكل التكاليف</b> Cost Structure</p>  <ul style="list-style-type: none"> <li>اخبار الموقع الإلكتروني وصيانته.</li> <li>تكاليف الحملات التسويقية والترويجية.</li> <li>تكلفة نشر الموقع الإلكتروني الخاص.</li> <li>موارد تشغيل الموقع الإلكتروني</li> <li>عقود سياسة الموقع الإلكتروني</li> </ul> <p><b>المجموع التقريري 73.000 الف</b></p>	<p><b>المصادر الإيرادات</b> Revenue Stream</p>  <ul style="list-style-type: none"> <li>رسوم تسجيل المستثمرين</li> <li>نسبة من نجاح الصفقة: عمولة تتراوح بين 1% - 2.5% من قيمة الصفقة.</li> <li>باقات استشارية: خدمات استشارية مدفوعة لأصحاب الأفكار.</li> <li>باقات تطوير نموذج العمل: خطط مدفوعة لتجديد وتطوير نموذج العمل.</li> <li>شراكات استراتيجية: اتفاقيات مع مراكز الابتكار وريادة الأعمال.</li> </ul>			



# INTEGRATION TESTING



## SETUPMOCKSERVER.TS

```
// Setup Mock Service Worker for Vitest (Node environment)
// -----
import { setupServer } from "msw/node";
import { handlers } from "./validateIdeaUniqueness.mock";

export const server = setupServer(...handlers);

beforeAll(() => server.listen());
afterEach(() => server.resetHandlers());
afterAll(() => server.close());
```

# VALIDATEIDEAUNIQUENESS.MOCK.TS

## MOCK HANDLER FOR POST METHOD

```
// ...
http.post("http://localhost:8000/ideas", async ({ request }) => {
  const body = (await request.json()) as IdeaPayload;

  // (FR6.1) accepted idea → generate BMC + summary
  if (body.ideaName === "Smart Tourism Guide Aseer") {
    return HttpResponse.json({
      status: "accepted",
      ideaName: body.ideaName,
      businessModel: {
        key_partners: ["Tourism Authority", "Local Guides"],
        key_activities: ["Route generation", "Mobile indexing"],
        key_resources: ["AI engine", "Geolocation data"],
        value_propositions: ["Personalized tourism routes"],
        customer_relationships: ["In-app support"],
        channels: ["Mobile App"],
        customer_segments: ["Tourists"],
        cost_structure: ["AI compute", "App maintenance"],
        revenue_streams: ["Premium features"]
      },
      summary: "Short summary"
    });
  }
}
```

## VALIDATEIDEAUNIQUENESS.MOCK.TS

## MOCK HANDLER FOR GET METHOD

```
// ...
http.get("http://localhost:8000/ideas/smart-tourism", () => {
  return HttpResponse.json({
    ideaName: "Smart Tourism Guide Aseer",
    businessModel: {
      key_partners: ["Tourism Authority", "Local Guides Association", "Aseer Tourism Board"],
      key_activities: ["Smart route generation", "Mobile app development", "Heritage mapping"],
      key_resources: ["AI algorithm", "Location database", "Local guide partnerships"],
      value_propositions: ["Personalized tourism routes", "Gamified exploration", "Local cultural insights"],
      customer_relationships: ["In-app support", "Personalized recommendations", "Tourist feedback system"],
      channels: ["Mobile App", "QR Codes at landmarks", "Tourism website"],
      customer_segments: ["Local tourists", "International visitors", "Heritage enthusiasts"],
      cost_structure: ["AI infrastructure", "App maintenance", "Data updates", "Marketing"],
      revenue_streams: ["Premium features", "Paid guided tours", "Partnership sponsorships"],
    },
    summary: "Short summary of the idea"
  });
});
```

## VALIDATEIDEAUNIQUENESS.MOCK.TS

## MOCK API RESPONSE FOR NON-UNIQUE IDEA SUBMISSION

```
// Similar idea → reject
if (body.ideaName === "Aseer Digital Tour Twin") {
  return HttpResponse.json({
    status: "rejected",
    similarity_score: 0.82,
    nearest_match: "Smart Tourism Guide Aseer",
    improvement_tips: {
      why_similar: ["Both target tourism in Aseer"],
      niche_pivots: ["Focus on heritage-only routes"],
      feature_differentiators: ["3D culture explorer"],
      gtm_strategies: ["Partner with local tour guides"],
      risks_and_mitigations: ["Avoid seasonality risks"]
    }
  })
}
```

# VALIDATEIDEAUNIQUENESS.TEST.TS

## INTEGRATION TEST FOR ACCEPTING A UNIQUE IDEA

```
it("accepts the first unique idea (no existing ideas yet)", async () => {
  const firstIdea: IdeaPayload = {
    ideaName: "Smart Tourism Guide Aseer",
    problem: "Tourists struggle to find places",
    solution: "AI-guided tourism",
    advantages: "Gamification",
    readinessLevel: "Concept",
    fields: ["Tourism"]
  };

  const result = await postIdea(firstIdea);

  expect(result.status).toBe("accepted");
  expect(result.ideaName).toBe("Smart Tourism Guide Aseer");
  expect(result.businessModel).toBeTypeOf("object");
  expect(result.summary).toBeTypeOf("string");
})};
```

# VALIDATEIDEAUNIQUENESS.TEST.TS

## INTEGRATION TEST FOR REJECTING NON-UNIQUE IDEA

```
it("rejects a very similar idea and returns improvement tips", async () => {
  const similarIdea: IdeaPayload = {
    ideaName: "Aseer Digital Tour Twin",
    problem: "Visitors still struggle",
    solution: "AI assistant tourism",
    advantages: "Same focus",
    readinessLevel: "Concept",
    fields: ["Tourism"]
  };

  const result = await postIdea(similarIdea);

  expect(result.status).toBe("rejected");
  expect(result.similarity_score).toBeGreaterThan(0.8);
  expect(result.nearest_match).toBe("Smart Tourism Guide Aseer");
  expect(result.improvement_tips).toBeTypeOf("object");
});
```

## VALIDATEIDEAUNIQUENESS.TEST.TS

## INTEGRATION TEST FOR REJECTING NON-UNIQUE IDEA

```
it("accepts a clearly different idea from another domain", async () => {
  const differentIdea: IdeaPayload = {
    ideaName: "AI Contract Reviewer for Legal Teams",
    problem: "Legal review is slow",
    solution: "AI clause detection",
    advantages: "Reduce time",
    readinessLevel: "Prototype",
    fields: ["LegalTech"]
  };

  const result = await postIdea(differentIdea);

  expect(result.status).toBe("accepted");
  expect(result.ideaName).toBe("AI Contract Reviewer for Legal Teams");
});
```

# VALIDATEIDEAUNIQUENESS.TEST.TS

## :INTEGRATION TEST FOR BUSINESS MODEL CANVAS GENERATION

```
it("generates Business Model Canvas for an accepted idea (FR6.1)", async () => {
  const idea = {
    ideaName: "Smart Tourism Guide Aseer",
    problem: "Tourists can't discover attractions easily in Aseer.",
    solution: "AI-driven mobile app with smart route recommendations.",
    advantages: "Gamified exploration + cultural insights + personalized routes.",
    readinessLevel: "Concept",
    fields: ["Tourism", "AI", "Mobile App"]
  };

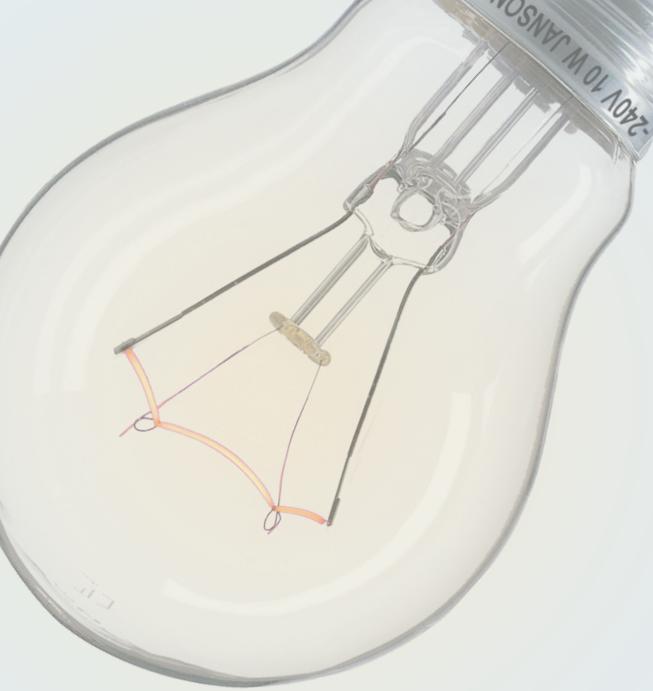
  const result = await postIdea(idea);
  // Verify status
  expect(result.status).toBe("accepted");
  // Ensure Business Model Canvas exists
  expect(result.businessModel).toBeDefined();
  expect(result.businessModel).toBeTypeOf("object");
  // Check that at least the 9 BMC sections exist
  expect(result.businessModel.key_partners).toBeDefined();
  expect(result.businessModel.key_activities).toBeDefined();
  expect(result.businessModel.key_resources).toBeDefined();
  expect(result.businessModel.value_propositions).toBeDefined();
  expect(result.businessModel.customer_relationships).toBeDefined();
  expect(result.businessModel.channels).toBeDefined();
  expect(result.businessModel.customer_segments).toBeDefined();
  expect(result.businessModel.cost_structure).toBeDefined();
  expect(result.businessModel.revenue_streams).toBeDefined();
  // And summary exists
  expect(result.summary).toBeTypeOf("string");
});
```

## VALIDATEIDEAUNIQUENESS.TEST.TS

# INTEGRATION TEST FOR VIEWING BUSINESS MODEL CANVAS

```
it("fetches and displays the Business Model Canvas for an existing idea ", async () => {
  const res = await axios.get("http://localhost:8000/ideas/smart-tourism");

  // API გვერდი Business Model
  expect(res.data.businessModel).toBeDefined();
  expect(res.data.businessModel.key_partners).toContain("Tourism Authority");
```



# SYSTEM TESTING



## IDEA OWNER

No.	Scenario	Steps	Result
1	Add Idea	Login > Home Page > Navigate to "Ideas Page" > Click on "Add Idea" > Fill in idea details > Click "Generate Business Model" > Add team members > Upload required files > Click "Submit Idea" > System validates and saves the idea successfully	Pass
2	Submit Activity Solution	Login > Home Page > Navigate to "Ideas Page" > Select idea > Click "Details" > Navigate to idea overview > click "Activities" > Download required activity template > Upload the activities solution file > System validates and attaches the file to the activity	Pass
3	Resubmit Activity After Review Comment	Login > Home Page > Navigate to "Ideas Page" > Select idea > Click "Details" > Navigate to idea overview > click "Activities" > Check activity status marked as "Review" > Read admin comment > Resubmit the activities solution file > System validates and attaches the file to the activity	Pass

No.	Scenario	Steps	Result
1	View Business Model Canvas	Login > Home Page > Navigate to "Ideas Page" > Select idea > Click "Details" > Navigate to "idea overview" > Click "Business Model Canvas" > System displays AI-generated BMC	Pass
2	Update Idea Status	Login > Home Page > Navigate to "Ideas Page" > Select idea > Click "Details" > Navigate to idea overview > Click "Update state" > Change idea status to either "Incubation" or "Ready to Invest" > Click "Update" > System automatically sends a status-change message email to the Idea Owner	Pass
3	Review Activity Submission	Login > Home Page > Navigate to "Ideas Page" > Select idea > Click "Details" > Navigate to idea overview > Click "Activities" > View submitted file > Change activity status from "Waiting" to "Review" > Add comment for corrections > Click "Send" > System updates activity status and attaches comment	Pass
4	Approve Activity	Login > Home Page > Navigate to "Ideas Page" > Select idea > Click "Details" > Navigate to idea overview > Click "Activities" > Review latest uploaded file > Change activity status from "Waiting or Review" to "Done" > System saves final status	Pass

No.	Scenario	Steps	Result
1	Subscribe to View Idea Details	Login > Home Page > Navigate to "Ideas Page" > Select an idea > System checks user subscription > System displays a popup window requiring subscription Click "Upgrade"> System displays subscription page > Confirm payment >System displays the confidentiality agreement > Click "Agree"> System unlocks access to view idea details	Pass
2	Chatting With the Idea Owner	Login > Home Page > Navigate to "Ideas Page" > Select an idea >Click "details"> System displays the confidentiality agreement > User clicks Agree > Navigate to idea overview > Click " Contact" > Click "Start" > System opens a chat session with the idea owner > Investor sends a negotiation message	Pass