

## 0. Team Formation

- Team members and their roles:

Patrick Michel

- Specialization: Cyber security, machine learning, full stack
- Responsibilities: Development of interfaces and backend management, AI integration, Data security and GDPR compliance
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Benjamin Ristord

- Specialization: Cyber security, machine learning, full stack
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Initial organizational proposal:

- Assignment of the role of temporary Project Manager:
- Suggestion: Patrick Michel as temporary PM
- Justification: Project initiator: first contacts with the client
- Establishing communication standards:

Communication tools offered:

- Principal : slack
  - Daily voice meetings
- Project management:
  - GitHub for task tracking
  - Canva for Agile Project Management
- Collaboration standards:
  - Daily standup meetings (15 min) every day
  - Sprint planning every 2 weeks
  - Mandatory code review before each merge
  - Systematic code documentation
- Decision-making process:
  - Major technical decisions: consensus required from both members
  - Minor decisions: autonomy in each area of specialization

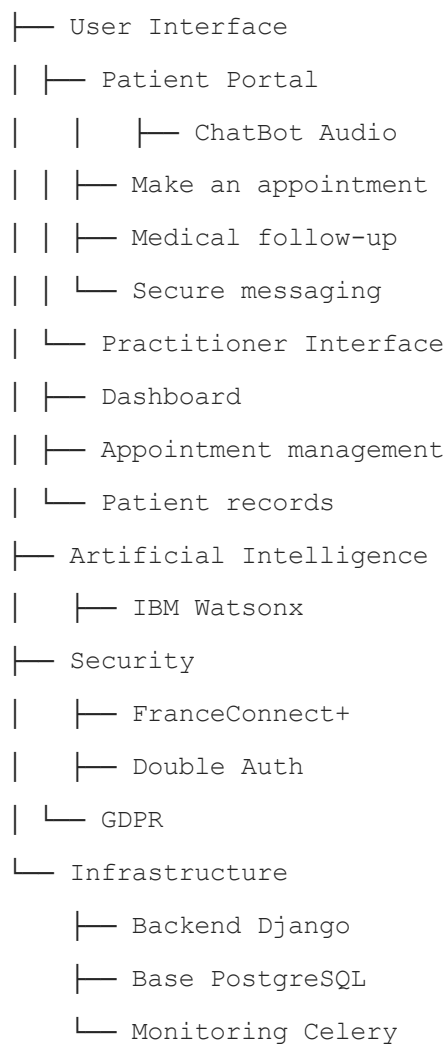
# 1. Research and Brainstorming

Analysis of the current context:

- Problem: Cardiology practice of Dr. TZVETKOV
- Identified needs: AI integration to facilitate administrative management, data security
- Available technologies : IA (IBM Watsonx), Django, PostgreSQL

## MIND MAPPING

CardioBot



## **FRAMEWORK SCAMPER**

### Substitute

- Replace phone calls with AI interactions
- Replace manual input with voice recognition
- Eventually replace Doctolib with an independent system

### Combine

- Merge FranceConnect+ authentication with double authentication

### Adapt

- Adapt the interface according to the user profile (patient/doctor)
- Personalize recommendations based on patient history

### Modify

- Optimize wait times in real time
- Improving User Experience with Contextual Chatbots

### Put to another use

- Transforming interactions into learning data for AI

### Eliminate

- Remove redundant steps in making appointments
- Reduce the time allocated to administrative tasks

### Reverse

- Reverse the flow: AI proactively suggests appointments
- Predictive rather than reactive system

### **QUESTIONS "HOW MIGHT WE"**

#### Patient Experience :

- How could we simplify making appointments for patients?
- How could we facilitate patient care?
- How could we facilitate the provision of patient documents?
- How could we provide more personalized follow-up?

#### Administrative Efficiency :

- How could we automate document management?
- How could we optimize and automate appointment scheduling?
- How could we reduce waiting time?

#### Security :

- How could we strengthen data protection while maintaining accessibility?
- How could we simplify authentication while making it more secure?
- How could we ensure GDPR compliance transparently?

#### AI Innovation :

- How could we use AI to prevent heart risks?
- How could we improve the accuracy of Watsonx AI responses?
- How could we personalize interactions according to the patient profile?

## **2. Idea Evaluation**

### **EVALUATION CRITERIA (Out of 5 points each)**

#### **A. Technical Feasibility (TF)**

- 5: Technologies mastered and tested
- 3: Requires moderate learning
- 1: Complex/new technology

#### **B. Impact Potentiel (IP)**

- 5: Major benefit for users/customers
- 3: Significant improvement
- 1: Impact minimal

#### **C. Technical Alignment (TA)**

- 5: Perfectly aligned with technical stack
- 3: Requires some adaptations
- 1: Requires major changes

#### **D. Scalability (SC)**

- 5: Highly scalable
- 3: Medium scalability
- 1: Difficult to scale

## E. GDPR Compliance (RG)

- 5: Fully compliant
- 3: Requires minor adaptations
- 1: Major Compliance Issues

## FEATURE EVALUATION MATRIX

Feature	FT	IP	AT	SC	RG	Total	Priority
FC+ Authentication	4	5	4	5	5	23	High
2. Chatbot Watsonx Admin	3	4	4	4	4	19	Haute
3. PostgreSQL Database	3	3	3	4	3	16	Average
4. Notifications Twilio	5	4	5	5	4	23	Haute
5. Double Auth	5	4	5	5	5	24	Haute
6. Monitoring Celery	3	3	3	3	3	15	Average

## RISK AND CONSTRAINTS ANALYSIS

### 1. FranceConnect+ Authentication (High Priority)

*Risks :*

- Deadlines for obtaining accreditations
- Changes in the FranceConnect API Constraints:
- Requires certification
- Limited response time

*Constraints :*

- RGS\* and GDPR approval required
- Separate recipe and production environments
- FranceConnect compliance tests imposed
- High level eIDAS integration
- FC+ specific user support

## ***2. Chatbot WatsonX (High Priority)***

*Risks :*

- Training complexity
- Ongoing maintenance required

*Constraints :*

- Significant server resources
- Team learning time

## ***3. PostgreSQL Database (Medium Priority)***

*Risks :*

- Complexity of configuration and optimization
- Increase in load to anticipate

*Constraints :*

- Significant hardware resources (4GB+ RAM, multi-core CPU, SSD)
- Complex configuration (tuning, backups, replication)



- Network security and access
- SQL and database admin expertise required
- Regular maintenance and monitoring

#### ***4. Twilio (High Priority)***

*Risks :*

- Variable costs depending on use
- Dependence on an external service

*Constraints :*

- Communication budget to plan
- Management of SMS/call quotas
- Configuration des webhooks
- API integration time

#### ***5. Double Auth (High Priority)***

*Risks :*

- Complexity of token management
- Risk of user blocking
- Securing secret keys

*Constraints :*

- Secure infrastructure required
- Management of loss of access cases
- Reinforced user support

- TOTP implementation time

### ***5. Monitoring Celery (Medium Priority)***

*Risks :*

- Surcharge des workers possible
- Loss of untracked tasks
- Complexity of debugging

*Constraints :*

- Dedicated server resources
- Configuration Redis/RabbitMQ
- Setting up alerts
- DevOps team training

### **3. Decision and Refinement**

- MVP SELECTION

After analyzing the evaluations and team discussions, the MVP will focus on:

“Virtual Administrative and Medical Management Assistant for Cardiology Practice”

- PROBLEM DEFINITION

Current issues identified:

- Administrative overload of the office (70% of the time)
- Long waiting times for patients
- Difficulty managing emergencies
- Risks of errors in patient monitoring
- Complexity of GDPR compliance
- TARGET AUDIENCE

Primary Users:

A. Medical Staff

- Dr. TZVETKOV (cardiologist)
- Medical secretarial
- Nurses

B. Patients

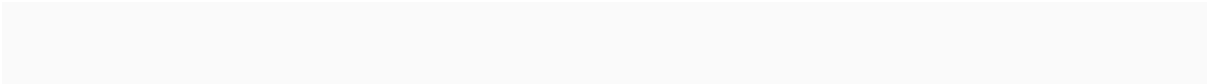
- Regular patients (cardiac monitoring)
- New patients
- Urgent cases
- Families/Accompanying people
- KEY FEATURES OF MVP

A. Patient Portal (High Priority)

Functionality	Description	Expected Result
-----	-----	-----
Authentication	FranceConnect+ & 2BUT	Enhanced security
Making an appointment	Int Doctolib egregation	-30% calls
Medical Follow-up	Patient Dashboard	+50% engagement
Secure Messaging communication	Communications RGPD	Smooth

B. Practitioner Interface (High Priority)

Feature	Description	Expected Result
-----	-----	-----
Dashboard	Overall activity view	+40% efficiency
Appointment management	Smart planning	-25% admin time
Patient Records	Data centralization	-50% paperwork
Emergencies	Prioritization system	Answer <15min



C. AI Assistant (Medium Priority)

Feature | Description | Expected Result

-----|-----|-----

Automatic Sorting | Classification of requests | -40% sorting time

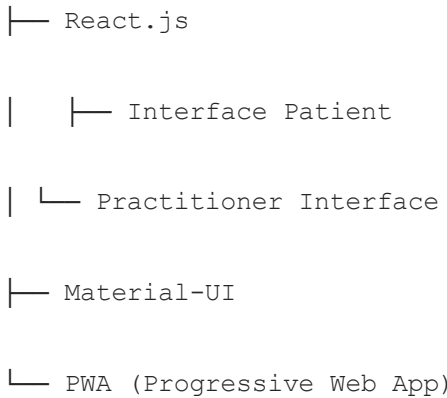
Auto Answers | Smart FAQ | -60% questions

Document Analysis | OCR + Classification | -30% entry

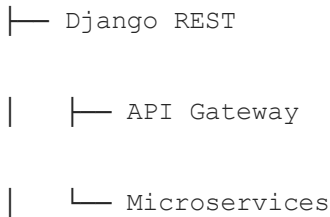


- ARCHITECTURE TECHNIQUE MVP

Frontend:



Backend:



└─ PostgreSQL

└─ Redis (Cache)

IA/ML:

└─ Watsonx AI (Chatbot)

└─ Watsonx AI (Medical)

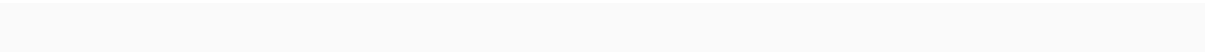
└─ CamemBERT (NLP)

Security:

└─ FranceConnect+

└─ 2FA

└─ E2E encryption



- EXPECTED RESULTS

A. Quantitative Metrics

Indicator | Objective

-----|-----

Administrative time | -40%

Average appointment time | -30%

Satisfaction patient | +50%

Administrative errors | -80%

Emergency response time | -50%

B. Qualitative Metrics

- Improved medical staff satisfaction
- Reduction of administrative stress
- Better patient-practitioner communication
- Strengthened GDPR compliance
- MVP DEVELOPMENT PLAN

Phase 1: Foundations (2 months)

Week | Objective

-----|-----

1-2 | Architecture base

3-4 | System auth

5-6 | DB & API core

7-8 | Unit testing

Phase 2: Core Features (2 months)

Week | Objective

-----|-----

9-10 | Interface patient

11-12 | Interface practitioner

13-16 | Messaging

### Phase 3: AI & Optimization (2 months)

Week | Objective

-----|-----

17-18 | Chatbot base

19-20 | Medical AI

21-22 | Tests & Debug

23-24 | Deployment

- CONSTRAINTS AND LIMITS MVP

Techniques :

- Real-time performance
- Medical data security
- System availability

Regulatory:



- strict GDPR
- HDS (Health Data Hosting)
- Medical standards

Users:

- Training required
- Resistance to change
- Accessibility
- NEXT STEPS

Immediate:

- Final customer validation
- Dev environment setup
- Detailed sprint planning

Short-term :

- Auth system development
- Creation of basic interfaces
- Preliminary tests

This detailed definition of MVP makes it possible to:

- Clarify objectives
- Set priorities
- Establish a realistic schedule
- Measuring success

## **4. Idea Development Documentation**

### **A. Ideas Considered**

#### **Idea 1: Standard Web Application**

- Forces :
  - Rapid development
  - Controlled costs
  - Accessibility from browser
- Weaknesses:
  - Limited performance
  - Limited offline features
  - Less smooth user experience
- Reason for rejection: Unsuitable for real-time performance constraints

#### **Idea 2: Native Mobile Application**

- Forces :
  - Performance optimale
  - Full access to device features
  - Better user experience
- Weaknesses:
  - More expensive development
  - Maintenance on multiple platforms
  - Complex distribution
- Reason for rejection: Incompatible budget and deadlines
-

### **Idea 3: Progressive Web App (Retainer)**

- Forces :
  - Optimal web/native compromise
  - Simplified deployment
  - Support offline
  - Controlled costs
- Weaknesses:
  - Limitations iOS
  - Average performance
  - Increased technical complexity

## **B. MVP Selected**

### **Description**

PWA solution with microservices architecture, integrating:

- FranceConnect+ authentication
- Secure medical data management
- Interface responsive
- Basic offline mode

### **Justification**

- Best cost/performance compromise
- Rapid deployment possible
- Guaranteed scalability
- Regulatory compliance made easy

## Potential Impact

- Business: ROI estimated at 6-8 months
- Users: Easier gradual adoption
- Technique: Solid basis for developments

## Constraints and Limits

Techniques :

- Real-time performance
- Medical data security
- 24/7 system availability

Regulatory:

- strict GDPR
- HDS (Health Data Hosting)
- Medical standards

Users:

- Training required
- Resistance to change
- Accessibility

## **C. Team Training**

### **Incorporation Process**

Roles identified:

- 2 Full-Stack developers
- 1 security/GDPR expert
- 2 UX/UI designers
- 1 Product Owner
- 1 Project Manager

Selection criteria:

- PWA Mastery
- GDPR/HDS knowledge

### **Organisation**

Structure :

- Self-organized agile team
- 2 week sprints
- Daily meetings

Methodology:

- Adapted Scrum
- Systematic code review

- CI/CD - Integration Continuous / Deployment Continuous
- DDD - Domain Driven Design

Communication :

- Slack for daily communication
- Canva for project monitoring
- Weekly reviews with Google Meet

## **Next Steps**

Immediate:

- Final customer validation
- Dev environment setup
- Detailed sprint planning

Short Term :

- Watsonx AI Studio Integration
- Auth system development
- Creation of basic interfaces
- Preliminary tests