Project Requirements Document: Cyclistic

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Client/Sponsor: Cyclistic & New York City

Purpose:

Cyclistic's Customer Growth Team is creating a business plan for next year. The aim of this project is to improve strategic decision making at Cyclistic by providing deep insights into user behaviour and bicycle demand. The dataset includes millions of rides, so the team wants a dashboard that summarizes key insights.This will enable optimising bicycle distribution, identifying new business opportunities and increasing customer satisfaction having in count Peak usage times, popular routes, and seasonal variations view must include key data points that are summarized and aggregated in order for the leadership team to get a clear vision of how customers are using Cyclistic.

Key dependencies

Human Resources:

This project will require a dataset of customer data, so the Director of Customer Data will need to approve the request. Approval should also be given by the teams that own specific product data including bike trip duration and bike identification numbers to validate that the data is being interpreted correctly. The primary contacts are Adhira Patel, Megan Pirato, Rick Andersson, and Tessa Blackwell.

- Team Project:
  - Alberto Jiménez, BI Analyst:
  - Adhira Patel, Estratega de API
  - Megan Pirato, Especialista en Almacenamiento de datos
  - Rick Andersson, Director, Gobierno de datos
  - Tessa Blackwell, Analista de datos
  - Brianne Sand, Directora de TI
  - Shareefah Hakimi, Gerente de proyectos

- Approval**:**
  - Jamal Harris, Director, Customer data.

Data:
- NYC Citi Bike Trips
- Census Bureau US Boundaries

Tools:
- Public Table
- Google Looker
- Google BigQuery

Infrastructure:
The resources needed to carry out the project will be Google BigQuery and Tableau Public

Stakeholder requirements

Let's consider its impact on strategic decision making for Cyclistic and on user satisfaction.

- **Functional requirements:**
  - **A: Required**
  - Frequency of use by zones, peak times: This is essential to optimize bicycle distribution and maintenance.
  - Types of trips (short, long): Helps to understand usage patterns and design specific marketing strategies.
  - Points of interest near stations: Allows you to identify the areas with the highest demand and optimize the location of the stations.
  - Frequency of station demand: This is essential for bicycle redistribution.
  - Most used bicycles, problems: Allows you to identify the bicycles that require the most maintenance and the recurring problems.
  - Usage rate: This is a key indicator of the success of the system.
  - Maintenance and optimization of distribution: Ensures the availability of bicycles and reduces operating costs.
  - **D: Desired**
  - Exploratory data analysis: Although important, it can be done iteratively and is not strictly necessary at the beginning.
  - Customer segmentation: Allows you to design personalized marketing strategies, but may require additional data.
  - **N: Nice to have**
  - Correlation between residence areas and patterns: This may be interesting for further studies, but is not critical for the initial functioning of the system.

- **Non-functional requirements:**
  - **A: Required**
  - Performance: It is essential to ensure a good user experience and quick decision making.
  - Security: It is essential to protect user data and comply with regulations.
  - Availability: An unavailable system cannot generate value.
  - **D: Desired**
  - Scalability: It is important to anticipate system growth, but it can be implemented gradually.
  - Usability: An intuitive interface facilitates the adoption of the system.
  - **N: Nice to have**
  - Maintainability: While important, it can be addressed through good development practices.

Success criteria

Specific metrics to measure success, such as the number of users interacting with the dashboard, the reduction in response time to business questions, or the increase in the accuracy of predictions.

Dashboard Usage Metrics

- Number of unique users accessing the dashboard: This indicates the adoption of the tool by users.
- Frequency of access to the dashboard: Allows us to evaluate the interest and usefulness of the dashboard on a daily basis.
- Average Session Time: Indicates how much time users spend browsing the data.
- Most visited pages: Identify the sections of the dashboard that generate the most interest.

Impact Metrics in Decision Making

- Number of strategic decisions based on dashboard insights: Quantifies the direct impact of the dashboard on decision-making.
- Time saved in obtaining information: Measures the efficiency of the dashboard compared to previous methods of obtaining data.
- Reduction in the number of ad hoc data requests: Evaluate the dashboard's ability to proactively answer business questions.

Data Quality Metrics

- Data Complete Percentage: Measures the quality of the data used in the analysis.
- Data consistency: Evaluates the consistency of data over time.
- Prediction accuracy: If predictive models are implemented, this metric is critical to assess the quality of the forecasts.

Cyclistic Specific Metrics

- Increase in number of trips: If the goal is to increase bicycle use, this metric is key.
- Reduction in average travel time: Indicates whether improvements in infrastructure or bicycle distribution are having a positive impact.
- Increased customer satisfaction: This can be measured through surveys or analysis of comments on social networks.
- Optimizing bike distribution: Measure whether redistributing bikes based on dashboard data has reduced imbalances between stations.
- Identification of new business opportunities: Evaluate whether the insights from the dashboard have allowed the identification of new market segments or additional services.

Dashboard example:

Indicator	Description	Unit of measurement	Measurement frequency
Number of unique users	Users accessing the dashboard	Number	Monthly
Average session time	Duration of each session on the dashboard	Minutes	Monthly
Increase in the number of trips	Year-over-year comparison	Percentage	Monthly
Accuracy of demand forecasts	Comparison between predictions and actual data	Percentage	Monthly

- Goals: Set clear, quantifiable goals, for example: "Increase the accuracy of demand forecasts at stations by 15%."

User journeys

Describes the workflow from logging into the BI tool to getting insights

Login: The user enters their credentials and accesses the tool.

1. Data exploration: The user explores the different datasets available and creates filters to segment the data.
2. Creating visualizations: The user selects the appropriate visualizations (maps, charts, etc.) and configures the dimensions and measures.
3. Data analysis: The user interacts with the visualizations to identify patterns and trends.
4. Report generation: The user creates customized reports and exports them in the desired format.

Detailed Functional Requirement Example

Requirement: The system must allow users to view the demand for bicycles per station on a map, with the possibility of filtering by date and time.

Acceptance Criteria:

- The map should show the location of each station.
- The size of the markers on the map should be proportional to the number of trips started at each station.
- Users should be able to select a date range to filter data.
- Users should be able to select a time range to filter data.

Assumptions

Assumptions you're making about data, infrastructure, user behavior, etc.

Assumptions:

- Data Quality:
  - Se asume que los datos de inicio y final de viaje tienen una precisión de al menos el 95% en términos de ubicación.
  - Se asume que los datos de clima están completos para al menos el 90% de los días analizados.
  - Se asume que los datos de Cyclistic y del Census Bureau son consistentes en términos de identificación de estaciones.
- Resource availability: It is assumed that the team has the necessary resources (hardware, software, personnel) to develop and maintain the BI tool.
- Technical knowledge: Team members are assumed to have the technical knowledge required to work with BI data and tools.
- Environmental stability: It is assumed that the technological environment (operating systems, databases, etc.) will remain stable during the development of the project.
- Stakeholder collaboration:
  - Se asume que el equipo de datos de Cyclistic responderá a las consultas sobre la calidad de los datos en un plazo máximo de 2 días hábiles.
  - Se asume que el equipo de producto de Cyclistic proporcionará retroalimentación sobre los resultados del análisis en un plazo máximo de 1 semana.

Supposed False:

Data quality

- Impact: If data is not accurate, complete or consistent, the analyses performed will be flawed and the conclusions drawn will be invalid. This could lead to wrong business decisions based on incorrect information.
- **Consequences:**
  - Loss of confidence in project results.
  - Delays in project delivery due to the need to clean and validate data.
  - Additional costs associated with data correction.

Availability of resources

- Impact: If the necessary resources (hardware, software, personnel) are not available, the project will be delayed or may even be compromised.
- **Consequences:**
  - Delays in project delivery.
  - Increased costs due to the need to acquire additional resources.
  - Reduction in the quality of the final product.

Technical knowledge

- Impact: If team members do not have the necessary technical knowledge, project development will be slower and more expensive.
- **Consequences:**
  - Increased development time.
  - Increased costs associated with staff training.
  - Greater likelihood of errors in development.

Stability of the environment

- Impact: If the technological environment changes during project development, this may require adjustments to the design and implementation of the solution.
- **Consequences:**
  - Developmental delays.
  - Increased costs associated with changes.
  - Increased risk of errors.

Stakeholder collaboration

- Impact: If stakeholders are not available to answer questions or provide feedback, the project could deviate from initial objectives.
- **Consequences:**
  - Reduced customer satisfaction.
  - Increased risk that the final product will not meet expectations.

Risk mitigation:

To mitigate the risks associated with these assumptions, the following measures can be implemented:

- **Data quality:**
  - Establish a data cleansing and validation process.
  - Perform data quality analysis on a regular basis.

- **Availability of resources:**
  - Plan the necessary resources in advance.
  - Establish a contingency plan in case resources are not available.

- **Technical knowledge:**
  - Provide training to staff.
  - Hire external consultants if necessary.

- **Environmental stability:**
  - Monitor the technological environment on a regular basis.
  - Develop a flexible solution that can adapt to changes.

- **Stakeholder collaboration:**
  - Establish clear and effective communication channels.
  - Conduct regular meetings with stakeholders.

	A	B	C
1	**Supuesto**	**Impacto si es Falso**	**Mitigación de Riesgos**
2	La calidad de los datos proporcionados por Cyclistic y el Census Bureau es precisa, completa y consistente.	Análisis erróneos, decisiones equivocadas.	Implementar un proceso de limpieza y validación de datos. Realizar análisis de calidad de los datos de forma regular.
3	El equipo cuenta con los recursos necesarios (hardware, software, personal) para desarrollar y mantener la herramienta de BI.	Retrasos en el proyecto, aumento de costos.	Planificar los recursos con anticipación. Establecer un plan de contingencia para adquirir recursos adicionales si es necesario.
4	Los miembros del equipo tienen los conocimientos técnicos necesarios.	Desarrollo lento, mayor probabilidad de errores.	Proporcionar capacitación al personal. Contratar consultores externos si es necesario.
5	El entorno tecnológico permanecerá estable durante el desarrollo del proyecto.	Retrasos en el desarrollo, aumento de costos.	Monitorear el entorno tecnológico de forma regular. Desarrollar una solución flexible.
6	Las partes interesadas estarán disponibles para responder preguntas y proporcionar retroalimentación.	Desviación del proyecto, reducción de la satisfacción del cliente.	Establecer canales de comunicación claros. Realizar reuniones regulares.
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Compliance and privacy

Here is a proposed structure and content for this section, adapting it to your specific needs:

1. Applicable Laws and Regulations

- Comprehensive list: List all relevant laws and regulations that apply to your product, such as GDPR, CCPA, HIPAA, etc.
- Jurisdictions: Specifies the geographic jurisdictions where these regulations will apply.
- Product Impact: Describe how each law impacts product functionality, design, and development.

2. Privacy Requirements

- Privacy Principles: Define the core privacy principles that will guide product development (e.g., data minimization, informed consent, transparency).
- Data collection and use: Specifies what data will be collected, how it will be used, and how long it will be stored.
- Consent: Describes how informed consent will be obtained from users for the processing of their data.
- Data security: Defines the technical and organizational security measures to protect users' personal data (encryption, restricted access, etc.).
- User rights: Specifies the rights of users over their data (access, rectification, deletion, portability).

3. Cookies and Tracking Management

- Cookie Policy: Describes what cookies are used, their purpose and how users can manage their cookie preferences.
- Tracking: Specifies what types of tracking will be performed (analytics, advertising, etc.) and how user consent will be obtained.

4. Transparency and Disclosure

- Privacy Notice: Describes how users will be informed about the collection and use of their data.
- Transparency Reports: Specifies whether transparency reports will be generated on data processing.

5. Security Incident Management

- Incident Notification: Defines procedures for detecting, investigating, and reporting security breaches.
- Recovery: Describes recovery plans in the event of security incidents.

Table Example for the "Compliance and Privacy" Section:

Requirement	Description	Compliance Metrics
GDPR Compliance	The product must comply with all provisions of the General Data Protection Regulation.	Percentage of GDPR-aligned features, number of security incidents, response time to user requests.
Informed consent	Users must give explicit consent to the processing of their personal data.	Consent rate, clarity of language used in privacy notices.
Data security	Personal data must be protected through encryption and access controls.	Number of vulnerabilities identified, time to resolve vulnerabilities.

Accessibility

Contrast Requirements

- Color schemes: Color schemes that meet WCAG 2.1 contrast standards (level AA or AAA) will be used to ensure that interface elements are legible for people with color blindness and other visual impairments.
- Text on background: The contrast between the text and the background shall be sufficient to ensure good readability in all lighting conditions.

Font Size and Legibility

- Minimum size: The minimum font size will be [X] points for main text elements.
- Typography: Clear and easy-to-read fonts will be used, avoiding decorative or difficult-to-distinguish fonts.
- Spacing: Appropriate spacing will be applied between lines and characters to improve readability.

Alternative Content

- Images and Graphics: All non-decorative images and graphics will include descriptive ALT tags that concisely and accurately describe the visual content.
- Interactive Elements: Interactive elements (buttons, links, etc.) will have clear and concise text labels indicating their function.

Keyboard Navigability

- Focus: All interactive elements of the interface will be focusable using the keyboard, following a logical navigation order.
- Shortcut Keys: Keyboard shortcuts will be provided for the most common functions.
- Focus indication: The element that has the focus will be visually distinguishable.

Other Accessibility Requirements

- Zoom: The interface must be fully functional when using the browser's zoom feature.
- Assistive technologies: The product must be compatible with assistive technologies such as screen readers and magnification software.
- Audio: If audio is used, transcripts or subtitles will be provided.
- Videos: Videos will include subtitles and audio descriptions.
- Forms: Forms will be designed to be easy to complete using assistive technologies.
- Screenshots: Mechanisms will be provided to capture and save content in different formats (text, image, PDF).

Reference Regulations:

- WCAG 2.1: Web Content Accessibility Guidelines (WCAG) 2.1 will be used as the primary reference to ensure product accessibility.
- [Other applicable regulations, depending on the context]

Accessibility Assessment: Periodic accessibility testing will be performed using automated and manual tools to verify compliance with these requirements.

Roll-out plan

Adaptation: Adapt this section to include:

- Phases: Divide the project into phases (design, development, testing, implementation).
- Milestones: Define the key milestones and deliverables for each phase.
- Resources: Assign the resources needed for each phase.

Example of how to integrate functional and non-functional requirements:

Section	Functional Requirement	Non-functional requirement
Stakeholder requirements	Generate a heat map showing demand by season.	The map should load in less than 5 seconds.
Success criteria	Increase the accuracy of demand forecasts by 10%.	The tool must be scalable to handle a 3% increase.

Launch Plan

"Scope" Section:

- Main objective of the project: Identify customer demand at different stations to optimize the distribution and maintenance of the bicycle fleet.

- Main objective of the design: Develop a data analysis tool that allows visualizing and analyzing bicycle use in real time, identifying usage patterns and trends.

- **Product scope:**
  - Collection of bicycle usage data (stations, hours, trip duration, etc.)
  - Data visualization through interactive charts and maps
  - Generation of customized reports for different stakeholders

"Features" section:

- **Data Analysis Module:**
  - Demand visualization by season and time of day
  - Identification of the most and least used stations
  - Analysis of average travel duration
  - Comparison of demand in different seasons and periods
- **Reporting module:**
  - Creating custom reports for different needs (operations, marketing, etc.)
  - Export data in different formats (CSV, Excel, PDF)

"Success Metrics" Section:

- **Number of users using the tool**
- **Frequency of use of the tool**
- **Accuracy of data collected**
- **Ability of the tool to identify relevant usage patterns**
- **Impact of the tool on decision making**

Priorities

- Critical Features: Identify the features that are essential for the initial release and that will provide the most value to users.
- Future Features: List additional features that will be developed in future releases.
- Integrations: Detail the integrations with external systems that are necessary for the launch.

Timeline

Phase	Key milestones	Deliverables	Resources	Estimated start date	Estimated completion date
Design	Wireframing, UI design, Information architecture design	Wireframes, mockups, style guide	UX/UI designers, product team	[Date]	[Date]
Development	Development of core functionalities, database construction, API integration	Source code, database, development environment	Developers, DevOps Engineers	[Date]	[Date]
Evidence	Unit testing, integration testing, user testing	Test reports, bug list	Testers, QA team	[Date]	[Date]
Implementation	Launch into production environment, user training, post-launch monitoring	Configured production environment, training materials, monitoring dashboard	Operations team, support team	[Date]	[Date]

Detailed Phases

- **Design:**
  - Create wireframes and prototypes to validate user experience.
  - Define the information architecture and navigation structure.
  - Develop a consistent visual style guide.
- **Development:**
  - Implement core functionalities according to defined requirements.
  - Build a robust and scalable database.
  - Integrate with external systems such as payments, shipping, etc.
- **Evidence:**

        - Perform unit tests to verify the correct operation of each component.
        - Run integration tests to ensure that different components interact correctly.
        - Conduct user testing to obtain feedback and make improvements.
- **Implementation:**
    - Deploy the product to the production environment.
    - Train users and support staff.
    - Monitor product performance and resolve any issues.

Risk Management

- Identify the main risks associated with the launch.
- Develop mitigation plans for each risk.
- Monitor risks throughout the project.