DUY TÂN
UNIVERSITY

CAPSTONE PROJECT 1

PROPOSAL DOCUMENT

LinguaSnap for Travelers

CODE: PROPOSAL_v1.3

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Submitted by
Dat, Nguyen Thanh
Truong, Vu Dinh
Long, Pham Ba Hoang
Kha, Nguyen Ngoc

Approved by Nguyen Duc Man

Capstone Project 1- Mentor:

Name	Signature	Date

INTERNATIONAL SCHOOL OF DUY TAN UNIVERSITY

PROJECT INFORMATION

Project acronym	LiS
Project title	LinguaSnap for Travelers
Start date	25 – February – 2023 **End Date** 31 – May – 2023
Lead institution	International School, Duy Tan University
Project mentor	Nguyen Duc Man Email: mannd@duytan.edu.vn Phone: +84 904 235 945
Partner organization	Duy Tan University

Scrum Master	Dat, Nguyen Thanh	ntdat1232001@gmail.com	0972530969
Product owner	Truong ,Vu Dinh	jonnyvu2210@gmail.com	0905223611
Team members	Kha, Nguyen Ngoc	winkha14567@gmail.com	0945721427
	Long, Pham Ba Hoang	longphambahoang@gmail.com	0793310221

Document History			
Version	**Author**	**Date**	**Comments**
V1.1	All members	5 March 2023	Draft for comment
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1. Introduction

1.1 Purpose

The purpose of the proposal is to:

- Define the business need and problem in detail.

- Provide solutions for business needs and show the overview of system architecture.

- Provide overview about resources, schedule, solution and budget for the project.

1.2 Scope

This document provides an overview of project will be developed. It includes the description of business need, the proposed solution, financial forecast and some constraints that involved in the project.

The document provides a comprehensive master plan for each phase of software development based on the processes that have been selected.

This document is made for senior management to put forward a proposal.

1. Project Overview

2.1 Project definition

To build an application with full features for users to translate and search after translation. Users can translate from image scan to search by image or search for content after detecting the language from the image. Users can review their usage history content.

2.2 Business needs/ User needs

Trying to grasp and understand the universal nuances of many languages is a whole different game. Until now, the only way to translate was for 'interpreters' to study multiple languages and try to translate and bridge language boundaries for different purposes.

When traveling or studying, people needs an application that can translate and search in the most accurate way, helping people to quickly solve the necessary problem.

Learning is the nature of each of us. The current trend of users needs technologies that make it easy to use and optimize in translation, search as well as being able to store the necessary things during use.

To resolve the above objectives, based on the knowledge of students about to graduate and enthusiastic guidance of instructors, the team will create an application that can translate from other languages and search based on the results after translation. The application allows scanning from images to text to find information, or search right from images to help us select text, search for favorite content in a smart way....

No need for users to finish copying and searching on other websites, this will cause time and errors in the process of copying and uploading to other websites for search

2.3   Prior Art:

Up until now, there have been a few common apps that provide some of those features, but they are not all together, which means users have to download several apps to use those features.

Example:

-       Google Translate
-       Google Lens
-       Microsoft Lens

	Google Lens	Microsoft Lens	Google Translate
Main Function	Image recognition and providing related information	Document scanning and converting to editable PDF or text	Text translation and providing related information
Language Support	Multiple languages	Multiple languages	Multiple languages
Integration	Integrated within Google Photos and Google Assistant	Integrated within Microsoft Office and OneDrive	Integrated within Google Translate and other Google apps
Performance	Good at recognizing objects, locations, products	Good at document scanning and text recognition	Good at text translation and providing related information
Accuracy	High accuracy in image recognition	Good accuracy in document scanning and text recognition	Good accuracy in text translation
Special Features	Product search, plant and animal recognition, location information	Converting documents to editable text	Text translation via image or text input

2.4 Proposed Solution

Our team decided to build a "LinguaSnap" app with convenient and fully functioning features by integrating Google Translation API, Machine Translated Kit . With these features, the users will have an easier time traveling or learning. Our project is built based on the requirements and our team come up with solutions and project implementation:

- Application is a mobile application, running on android platform.
- This software is design for users whoa are tourists, students …and other people who want an app that can help them translate.

2.4.1 Project goal

The goal of project is to build the "LinguaSnap" app with more functions that meet customer needs within budget and schedule successfully:

- Translate the texts that the user wish to know with different approaches with different languages.
- Help the user find the location of a picture on the internet.
- Synchronize user accounts for persistent data.
- User guide.

2.4.2 Introduction ML (Machine Translated) Kit

ML Kit is a mobile SDK that brings Google's machine learning expertise to Android and iOS apps in a powerful yet easy-to-use package. ML Kit comes with a set of ready-to-use APIs for common mobile use cases: recognizing text, detecting faces, identifying landmarks, scanning barcodes, labeling images, and identifying the language of text. ML Kit's selection of APIs run on-device or in the cloud. Our on-device APIs can process your data quickly and work even when there's no network connection. Our cloud-based APIs, on the other hand, leverage the power of Google Cloud's machine learning technology to give you an even higher level of accuracy.

2.4.3 Introduction Google Translation API

The Google Translation API is a cloud-based service provided by Google that allows developers to integrate machine translation functionality into their applications. The API provides a simple, programmatic interface for translating text from one language to another using Google's machine learning algorithms.

Developers can use the Google Translation API to build applications that can automatically translate text on the fly, such as chatbots or mobile apps. The API supports over 100 languages and can handle both text and speech input.

2.4.4 Introduction Firebase Realtime Database

The Firebase Realtime Database lets you build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, realtime events continue to fire, giving the

end user a responsive experience. When the device regains connection, the Realtime Database synchronizes the local data changes with the remote updates that occurred while the client was offline, merging any conflicts automatically.

The Realtime Database provides a flexible, expression-based rules language, called Firebase Realtime Database Security Rules, to define how your data should be

structured and when data can be read from or written to. When integrated with Firebase Authentication, developers can define who has access to what data, and how they can access it.

The Realtime Database is a NoSQL database and as such has different optimizations and functionality compared to a relational database. The Realtime Database API is designed to only allow operations that can be executed quickly. This enables you to build a great realtime experience that can serve millions of users without compromising on responsiveness.

2.4.5 System overview
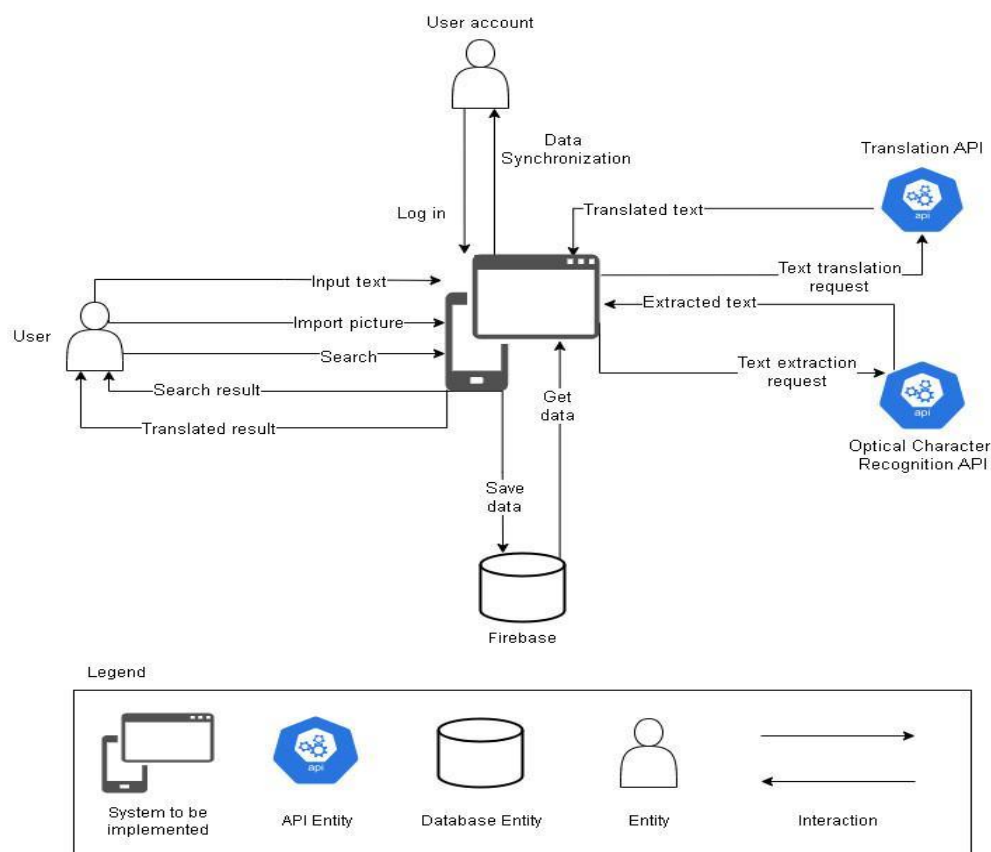
2.4.5.1   System context

Figure 1: System context overview

2.4.5.2 System context description

The application will provide 3 main features:

● Translate the texts users wish to know by different forms of approaches such as writing, speaking, pictures.
● Find the location of the pictures they import on the Internet.
● Store the data of the user for synchronization and other functions.

2.4.6 Technical Constrains

Technicals for Buiding Project

- Language: Java

- Operating system: Microsoft Windows

- Develop tool: Android Studio

- Database Management System: Firebase

Environment

- Tool: Android Studio

- Operation systems: Microsoft Windows

Bussiness Constraints

o Resource: 4 people.

o Budget: 3000$.

o Time: The project must be completed within 3 months.

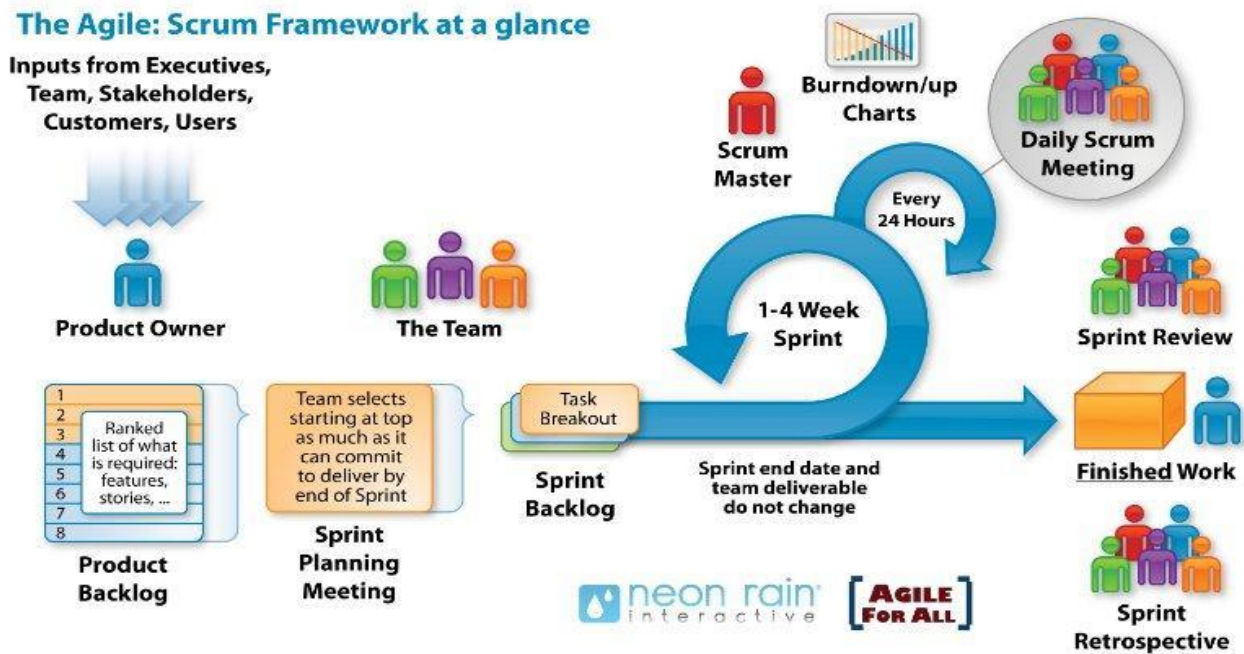## 3 Master Plan

3.1 Scrum Process

Figure 2: General SCRUM Process

● Scrum is an iterative and incremental agile software development framework for managing software projects and product or application development.

● Scrum focuses on project management institutions where it is difficult to plan ahead.

● Mechanisms of empirical process control, where feedback loops that constitute the core management technique are used as opposed to traditional command-and-control management.

● Its approach to planning and managing projects is by bringing decision-making authority to the level of operation properties and certainties.

4 Organization Management

4.1 Human Resource

➢ Team's Information

Full Name	Phone	Email	Position
Msc. Nguyen Duc Man		mannd@dtu.duytan.edu	Mentor

Nguyen Thanh Dat	0972530969	ntdat1232001@gmail.com	Team Leader
Nguyen Ngoc Kha	0945721427	winkha14567@gmail.com	Team Member
Pham Ba Hoang Long	0793310221	longphambahoang@gmail.com	Team Member
Vu Dinh Truong	0905223611	jonnyvu2210@gmail.com	Team Member

4.2 Master plan

NO	Task Name	Duration	Start	Finish
1	Initial	4	25/02/2023	03/03/2023
	Gathering Requirement	3	27/02/2023	02/03/2023
	Create Proposal Document	1	03/03/2023	03/03/2023
2	Start Up	3	06/03/2023	08/03/2023
	Create documents for project	3	06/03/2023	08/03/2023
3	Development	56	09/03/2023	26/05/2023
	Sprint 1	21	09/03/2023	07/04/2023
	Sprint 2	21	08/04/2023	09/05/2023
	Sprint 3	14	10/05/2023	30/05/2023
4	Project's Retrospective Meeting and final release	1	31/05/2023	31/05/2023

5 Cost Estimation

The following outlines the cost to complete all the identified components for the project.

No.	Phase	Milestone	Cost(2 hours/day) USD
1.	Start-up	STU	$100
2.	Development	SPR1	$600
		SPR2	$600
		SPR3	$600
3.	Other costs	OTH	$300
4.	Project's Meeting	PM	$20
5.	Final Release	FR	$28
6.	**Total**		**$2.248**

6 Project Constraints

Constraint	Constraints Description	Guidelines for Acceptance
Information sharing	N/a	N/a
Ethical	Translate apps can sometimes produce inaccurate translations, which can result in misunderstandings or miscommunications. It is essential to ensure that the translations provided by the app are reliable and accurate, especially when it comes to critical or sensitive information. Translate apps can pose a risk to confidentiality if they are used to translate sensitive or confidential information. It is essential to ensure that the app's privacy policy and terms of use protect the	+ Absolute security for the user's personal data in the application, not using with unauthorized purposes, disrespecting user data. + Build clean applications with safe content, do not contain offensive, cultural and unethical images + Pay special attention to gender, religion, ethnicity, and age issues.

	confidentiality and security of the data being translated.	
Intellectual property rights issues	N/a	N/a
Economic and E-Commerce	This project is under monitoring by the college campus environment, so, this is a non-profit project	+ Information security, preventing fake information and untrustworthy information. Provide sufficient information and support state management agencies in investigating business acts in violation of the law using their application.
Trade promotion activities	N/a	N/a
Advertising activities	N/a	N/a
Google Play Store Policies	N/a	N/a
Sustainability	A quality software product must cover issues from future development to maintenance and expansion. To achieve sustainability and long-term survival in the market it must achieve sustainability from the investment of resources, infrastructure, material, equipment, maintenance, ... This attribute determines the viability of a product and the possibility of its future development.	+ The system operates 24/7 with 99.99% uptime + Reuse existing services with low risk and high reliability. + Periodically back up data to ensure data safety, avoid data loss cases + Test achieves a minimum error coverage rate of 80%. + Update new technology trends to keep up with the age and increase competitiveness

7 Conclusion

Traveling to a new country can be an exciting and enriching experience, but it can also be challenging if you don't speak the local language. Ordering food, asking for directions, or even reading street signs can be difficult when you don't understand the language. With the help of this app, you can navigate language barriers with ease and enjoy all that your destination has to offer. From snapping a picture of a menu to translating a conversation in real-time, this app provides the convenience and accessibility that travelers need.

Our system will integrate with Translation API for translating text, Image Search API for searching similar result and OCR API for extracting text from image. The project team will develop this system within 12 weeks with a budget of 3000 dollars for 4 members. We ensure compliance with schedule, budget and on-time product delivery. We are determined to together with consensus, solidarity, research solutions to overcome challenges and manage progress to bring the project to success.

8 References

No.	References	Document Information
1	Scrum Model	https://en.wikipedia.org/wiki/Scrum_(software_development)
		https://www.atlassian.com/agile/scrum
		https://www.digite.com/agile/scrum-methodology/
		https://docs.microsoft.com/en-us/azure/devops/boards/sprints/b est-practices-scrum?view=azure-devops
		https://www.scrum.org/resources/scrum-guide
2	Technical	https://api-ninjas.com/api/imagetotext
		https://ocr.space/ocrapi
		https://cloud.google.com/translate
		https://github.com/matheuss/google-translate-api
3.	Software Engineering Standards	https://www.nws.noaa.gov/oh/hrl/developers_docs/General_So ftware_Standards.pdf
		https://standards.ieee.org/standard/12208-2017.html

		https://sw-eng.larc.nasa.gov/

9 Attachment: DESCRIPTION OF PRODUCT REQUIREMENTS FORM

DESCRIPTION OF PRODUCT REQUIREMENTS

Group: C1SE.05

Project: Traveling Companion

Date: 06 Mar 2023

9.1 Short description of product ideas (less than 7 statements)

Today's modern life, the quality of human life has improved in every aspect. As a result, the need for entertainment, such as travel, has grown stronger than ever. However, traveling to another country is not that simple. Language barriers and lack of knowledge have proved to be significant problems that can ruin your vacation. Nowadays, everyone owns a smartphone, so we came up with an idea that can help you search an entire picture, translate and extract the words from the image, and much more.

Translation can be done manually by a human translator, or through the use of machine translation software, which employs algorithms and artificial intelligence to automatically translate text. Translation is an important tool for communication, enabling people from different linguistic and cultural backgrounds to understand and interact with each other.

9.2 Requirements

High-level Functional Requirements	1. Input: The system should be able to receive input in the form of text, speech or other data format from the user.
	2. Source Language Identification: The system should be able to automatically identify the language of the input text.
	3. Translation: The system should be able to transl language.
	4. Output: The system should be able to output the translated text in the desired format, such as text, speech or other data format.
	5. Quality Assessment: The system should be able to assess the quality of the translation based on various parameters, such as accuracy, fluency, and naturalness.

	6. Customization: The system should allow for customization based on user needs, such as specialized vocabularies or industry-specific terminology.
	7. Integration: The system should be able to integrate with other software or systems, such as chatbots or content management systems.
	8. Security: The system should ensure the security of the input and output data, and protect user privacy.
	9. Performance: The system should be able to provide accurate and efficient translations within a reasonable amount of time.
	10. User Interface: The system should have a user-friendly interface that is easy to use and understand, and should provide feedback to the user throughout the translation process.

Quality Attributes Requirements (example related to issues: Ease Use, Easy to Like, Easy to Learn, Easy to Understand, Easy to Buy / Yes, ...)	1. Ease Use
	2. Easy to Understand
	3.
	4.
	5.

Operation Requirements (related to issues: Speed, Accuracy, Performance, Stability, Load Resistance, Scalability, Safety, ...)	1. Accuracy
	2. Stability
	3. Scalability
	4.
	5.

Environment & Operation Requirements (related to issues: physical impacts on the environment, interact with relevant or existing systems, conditions for product commercialization, ...)	1. Environmental factors do not affect the system
	2.
	3.
	4.
	5.

	1. Periodical maintenance once every 3 months

Requirements for Maintenance & Support	2.
	3.
	4.
	5.

Security/ Safety Requirements (related to issues: conditions of use / access to products, personal freedom, inspection, ...)	1. User's personal information is kept confidential.
	2.
	3.
	4.
	5.

Culture Requirements	1. Slang and Colloquialisms: The system should be able to accurately translate slang and colloquialisms in a way that reflects their cultural context.
	2. Political Correctness: The system should be designed to avoid language that may be considered offensive or inappropriate in certain cultural contexts.
	3. User Feedback: The system should allow users to provide feedback on translations to help improve the accuracy and appropriateness of future translations.
	4.
	5.

Evaluate the complexity of engineering problems		1. Involving wide-ranging or conflicting technical issues
		2. Having no obvious solution
		3. Addressing problems not encompassed by current standards and codes
		4. Involving diverse groups of stakeholders
	✓	5. Including many component parts or sub-problems
		6. Involving multiple disciplines
		7. Having significant consequences in a range of contexts

Standard requirements	✓	1. Code standard. (GNU, Oracle standard for Java, ..,)

		2. Design standard. (design patterns, object-oriented analysis and design,…).
		3. IEEE (1058, 1540, 830, 1016, 829, 1012, 1008)
		4. ISO/IEC/IEEE 12207:2017 (TCVN 10539:2014); ISO/IEC 25051:2006(TCVN 10540:2014);
		5. Other standards. (related to specific topics)