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Research Article

Pedagogical Agent for Okun Language Expression Construction and Translation Using a Computer Support Collaborative Learning (Cscl) Approach in a Cloud Environment

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Abstract: Some scholars define mobile learning and language expression construction as a process of gaining knowledge through conversations across multiple contexts among people and personnel, using interactive technologies with a focus on contexts. Okun Language expression translator is a bilingual machine translation, developed to translate words, phrases or sentence written in English to Okun language. In this research work, the application was developed using **ASP.NET** which of course is an open-source server-side web application framework. ASP.NET is built on the Common Language Runtime (CLR), allowing programmers to write ASP.NET code using any supported .NET language. In this App., we employed C# server side programming language alongside ASP.NET. These were chosen due to these characteristics: It ensures high reliability and security due to built-in windows authentication and per-application configuration. Its object oriented features and wealth of .NET class libraries for developing web based applications. Just-in-Time compilation, smart catching technologies and native optimization dramatically increase overall application performance. It provides ability of cross platform migration. It is regularly updated by Microsoft to meet the most up-to-date technology.

Keywords: Cloud, Mobile Learning, machine translation, Mobile Assisted , Language learning, computer-assisted language learning, U-learning.

CHAPTER 1. INTRODUCTION

One could ask, if technology is a tool for language learning, or if language learning is a tool with which people can embrace technology? This research work suggests that both language and technology are tools for individual and societal development. This paper work also introduces a developmental approach to integrating technology in Okun language learning and expression construction during conversation. Due to the current drive in ICT, the term cloud computing is often used for advertising purposes in order to rebrand existing offerings with a new wrap. The CEO of Oracle, Larry Ellison's statement at 2007s Analysts' Conference provides a felicitous example which stated, "Cloud computing has severally been redefined with different approach, by different ICT scholars also at various levels of understanding to include everything that we already do in this global village. I can't think of anything that isn't cloud computing with all of these announcements. The computer industry is the only industry that is more fashion-driven than women's fashion" (Fowler *et al*., 2009). Mobile technologies are seriously giving rooms for new users, also providing high capacity, and allowing more sophisticated use. Since they are becoming very accessible for individuals in most parts of the world, it has a great role in facilitating learning both in formal and informal context. Due to this, Mobile Learning (ML) was introduced and later attracted the attention of educators in various academic institutions. When it comes to language learning using mobile technology, it is termed, Mobile Assisted Language Learning (MALL). In which the most dynamic applications of computer-assisted language learning (CALL) involve simulations, electronic communication, and multimedia production rather than simple drill-and-practice tutorials (Egbert and Hanson-Smith, 1999). The term cloud computing is sometimes used to refer to a new paradigm, information

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and communication analysts see cloud computing as a so-called emerging "technology" (Fenn *et al*., 2008). Although, nearly everybody in the IT sector speaks about cloud computing, the concept remains somehow unclear to many. Our understanding of cloud computing is that of a new business model for delivering IT resources and services, flexible, on demand and on a pay-per-use basis. A good business skill demands the proper management and storage of data. Cloud computing can be considered a new computing paradigm that allows users to temporary utilize computing infrastructure over the network, supplied as a service levels of abstraction" (Yourseff *et al*., 2008).

Also according to Armbrust *et al*., (2009) in their article, refers to cloud computing as the applications delivered as a service over the internet and the hardware and systems software in the data centers that provides the services. These services themselves have long been referred to as software as a service (SaaS). The datacenter hardware and software is what we call a cloud. When a cloud is made available in a pay-as-you-go manner to the general public, we call it a public cloud. We use the term private cloud to refer to internal data centers of a business or other organizations, not made available to the general public. Thus, cloud computing is the sum of SaaS and utility computing, but does not include private clouds as described by these authors.

Buyya *et al.,* (2008) postulated a more focused approach regarding cloud computing as a kind of parallel and distributed system that consists of a collection of virtualized computers. Also this system provides resources dynamically, whereas service level agreement (SLA) is negotiated between the service provider and the customer. The market research company for example, explains cloud computing as "an emerging IT development, deployment and delivery model, and enabling real time delivery of products, services and solutions over the internet" (Gens and Frank, 2008.)

In that case, cloud computing can be looked upon to as a technical method of offering cloud services that offers customers and business solutions that are used on real-time basis, over the internet. Another way in which this emerging IT development, deployment and delivery model is as a "style of computing where massively scalable IT enabled capabilities are delivered "as a service" to external customers using internet technologies". The word Cloud computing could be seen as an innovation in so many ways. From technological angle, it can be viewed as an advancement in computing, which involves the application of virtualization concepts to utilize hardware more efficiently and easily.

CHAPTER 2. THE CONCEPTS AND IDEAS OF INTERACTIVE MOBILE LEARNING

Some scholars define mobile learning and language expression construction as a process of gaining knowledge through conversations across multiple contexts among people and personnel, using interactive technologies with a focus on contexts (Sharples et al., 2007).The technology which could be applied to achieve this plight in this process includes any kind of portable and handheld mobile devices such as cell phones, personal digital assistants (PDAs), smartphones, pads, pods, etc. Others define it as the use of mobile technologies in language learning and expression construction, especially in situations where device portability offers specific advantages (Kukulska-Hulme, 2013). Mobile assisted learning includes devices ranging from MP3/MP4 players, smart phones, and e-book readers through to laptop and tablet computers. As a whole, from the above definitions, it is possible to say that mobile learning is creating an interactive learning environment with multiple contexts using different kinds of applications which are available in the mobile device or gadget. Mobile language learning and expression construction is a field that is quickly maturing, and to this end, a growing body of research has appeared that highlights the various ways in which mobile devices may be used in the learning and construction of very simple or concretized languages expressions. Various researches have over the years shed light on the potentiality and role that mobile devices may play in language learning and expression construction.

The main features of mobile learning and language expression construction and translation are: accessibility, immediacy, interactivity and situating of instructional activities (Ogata and Yano, 2005). Accessibility refers to the extent to which every user, in this, case foreigners or non-indigenes owes the mobile. These days most of the user (foreigners or non-indigenes) are having the technology regardless of the place they are living. In addition, as the technology is available in most places, except remote areas, users can be connected and extend their opportunity to learn and construct their expressions within the shortest possible time. The application of "Ubiquitous Computing" to learning brought new issues in research. Bringing the right learning interaction at the right time in the right situation characterize "Ubiquitous Learning"(U-learning). Recent achievements in Context-aware computing has made individual learning environment to be embedded in our daily real life scenarios.

CHAPTER 3 EXPERIMENTAL SECTION INTRODUCTION

The main objective of this application development is to provide a more effective way to translate texts or sentences written in English Language to Okun Language and to act as simple language dictionary for visitors in Okun land. Okun Language

translator is a bilingual machine translation, developed to translate words, phrases or sentence written in English to Okun language. It offers a website interface that can be used as learning tools by visitors in Okun land. During a translation, it search for patterns from the database to help decide on the best translation. Okun language translator can also be used to translate whole sentence at a time, rather than just piece by piece. It uses this broader context to help it figure out the most relevant translation, which it then rearranges and adjusts to be more like a human speaking with proper grammar. Originally only enabled for a few languages in Okun, and will gradually be improved for more.

Okun is the term generally used to describe groups of Yoruba-speaking communities in Kogi state, North-central Nigeria. Their dialects are generally classified in the Northeast Yoruba language (NEY) grouping. They are collectively called "Okun", which in the Yoruba language means 'vitality' or 'strength', and is the word commonly used in greeting among the people, although this form of greeting is also found among the Ekiti and Igbomina groups of Yoruba people. This identity, which was probably first suggested by Eva Kraft-Askari during a 1965 field expedition, has gained wide acceptance among the indigenous Yoruba people and scholars. The individual Okun subgroups share some historical and linguistic affinity but still maintain individual peculiarities. "Okun" therefore refers to the distinct, but culturally related Owé, Ìyàgbà, Ìjùmú, Gbede, Bùnú or Abunu, Ikiri and Òwòrò peoples, who together are said to make up 20% of the Kogi State population, according to the highly controversial 2006 National population census.

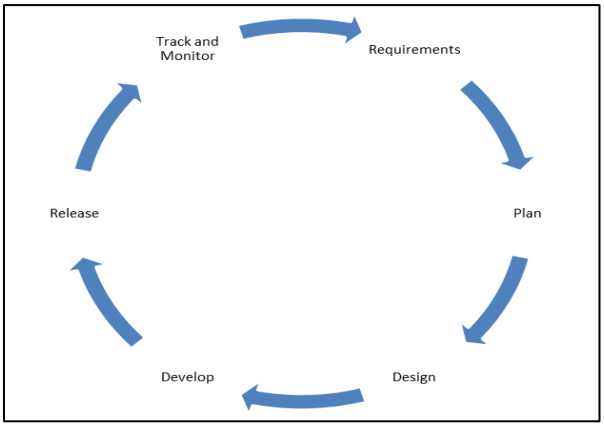
METHODOLOGY

Development Approach /Methodology

Stages in Agile **The**

Agile methodology for mobile application development that we used is supported by an array of proven practices, covering processes like requirement gathering, design, modelling, coding, testing, planning, risk management, quality compliance, etc. Here is a list of significant *Agile software development* practices and the ultimate benefits you have.

Agile is a process that helps teams provide quick and unpredictable responses to the feedback they receive on their project. It creates opportunities to assess a project's direction during the development cycle. Teams assess the project in regular meetings called sprints or iterations.



Agile Development Methodology

An agile is a very **empowering process** that helps companies design and build the right product. The management process is very beneficial for software companies because it helps them analyze and improve their product throughout its development.

The agile process breaks a larger software project into several smaller parts that can be developed in increments and iterations. Studies have proven that there is a negative correlation between project size and success (i.e.: the shorter the project, the higher the success rate).

The agile approach reduces the size of the project by creating several smaller projects. This iteration approach distinguishes Agile management from other management methods.

Unlike other methods, Agile management uses iterations during the planning and development phases.

1. Acceptance Test-Driven Development (ATDD)

Bridging you with designers, developers, and testers, it helps you to communicate your app development project-specific requirements ahead of the implementation.

2. Agile Modeling

We document the values and principles to be applied in the ***mobile app development*** projects that eases the implementation of other **agile development methodologies** such as Scrum, extreme programming (XP), and Rational Unified Process (RUP).

3. Agile Testing

Making testing an integral part of the **mobile app development** lifecycle, we make sure that bugs and errors are nipped in the bud. Lead by testers, Agile testing, keeps everyone from UX-UI mobile app designers to mobile app developers in the loop.

4. Backlogs (Product and Sprint)

Every stakeholder remains in the know of their to-do and what's pending lists. This helps us achieve the expectations with iterative and incremental **mobile app development**.

5. Behavior-Driven Development (BDD)

Validation of every app-functionality is done in a planned way so as not to miss any test cases or criterion defining them. This also entails knowing the root causes and relevant fixes.

ASP.NET: Is an open-source server-side web application framework developed by Microsoft to allow programmers to build dynamic web sites, applications and services. ASP.NET is built on the Common Language Runtime (CLR), allowing programmers to write ASP.NET code using any supported .NET language. In this system we employed C# server side programming language alongside ASP.NET. This language was chosen due to the following reasons:

- It ensures high reliability and security due to built-in windows authentication and per-application configuration.
- Its object oriented features and wealth of .NET class libraries for developing web based applications.
- Just-in-Time compilation, smart catching technologies and native optimization dramatically increase overall application performance.
- It provides ability of cross platform migration.
- It is regularly updated by Microsoft to meet the most up-to-date technology.

MSSQL (Microsoft Structured Query Language): Microsoft SQL Server is a relational database management system developed by Microsoft. It is a software product with the primary function of storing and retrieving data as requested by another software applications, which may run either on the same computer or on another computer across a network. MSSQL is like other RDBMS software, which is built on top of SQL, a standardized programming language database administrators and IT Professionals use to manage database and query the data they contain.

CHAPTER 4. SYSTEM FUNCTIONS

SYSTEM REQUIREMENT

Hardware Specification: For this system to be used efficiently and accurately, it requires certain hardware components or other software resources to be present on a computer. These prerequisites are known as (computer hardware specification) and are often used as a guideline as opposed to an absolute rule. Most software defines two sets of system requirements: minimum and recommended. With increasing demand for higher processing power and resources. The following sub-section discuss the various aspects of hardware requirements for this application software.

The Hardware Required Includes:

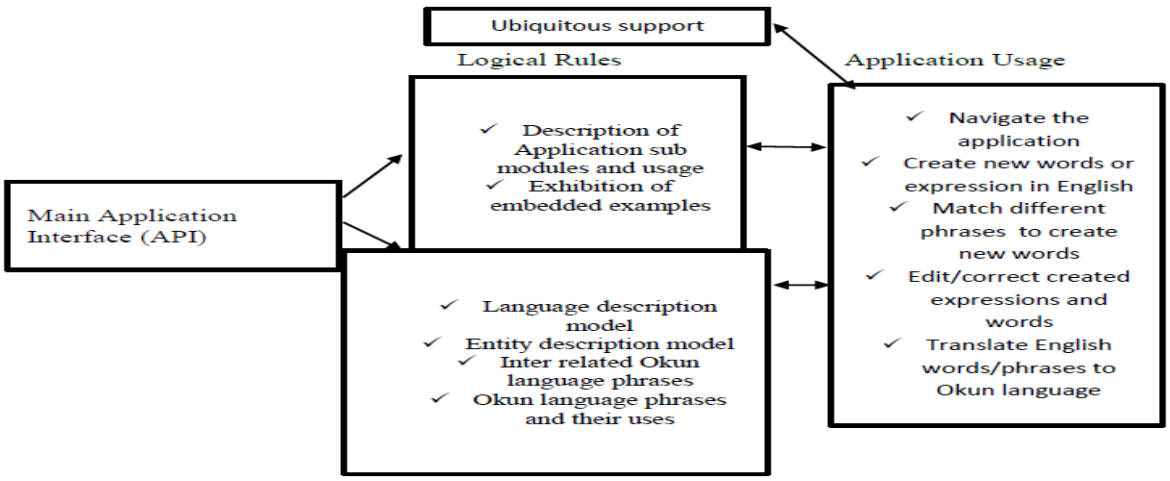
i. Processor 2.4 GHZ processor speed
ii. Hard Disk space 100 GB (including 20 GB for database Management system)
iii. SVGA color monitor or higher quality.
iv. RAM 2GB (Recommended minimum).
v. Backup storage hard disk of about 20GB.
vi. An enhanced keyboard.

Software Specification: The software requirements specification enlists enough and necessary requirements that are required for the smooth running of the system.

The software components used for this project are:

i. Operating system; Windows 98/2000/XP/Vista/7/8/10.
ii. Microsoft Visual Studio 2015 (Front end)
iii. MSSQL Database (Back end)
iv. .NET Framework 4.5

Cloud supported Okun language expression translator Application module



CHAPTER 5. RESULTS AND DISCUSSION

This section of the research work is prepared and illustrated using various screen shorts gotten after inputting various vocabularies in English language and its equivalence in Okun native language. It is also prepared for users to make efficient use of the application.

The guide assumes a working knowledge of Microsoft Windows®. It has been written using the same conventions as other Microsoft documentation with which users should already be familiar with.

USING THE GRAPHICAL INTERFACE:

The graphical Interface provides you with the basic Information required to start using the application. This section focuses on familiarizing the user with the application graphical environment, and providing the user with the basic information necessary to begin using the software. The software runs under the popular Microsoft Windows graphical user interface. The first step in performing any operation within the system is for the user to visit the application home page.

Landing Page

This Figure below shows the application Home page. On this page the application user can translate words, phrases or sentence in English to Okun Language by taken the few steps below.

- Input the English word, phrase or sentence in the text field
- Click Translate
- Scroll down to see the result

Fig 1. Showing the Home page interface

Logging In

The figure below shows the admin login page. Validations are being enforced to restrict errors and prompt the user on incorrect actions. The page is strictly restricted to the Admin only.

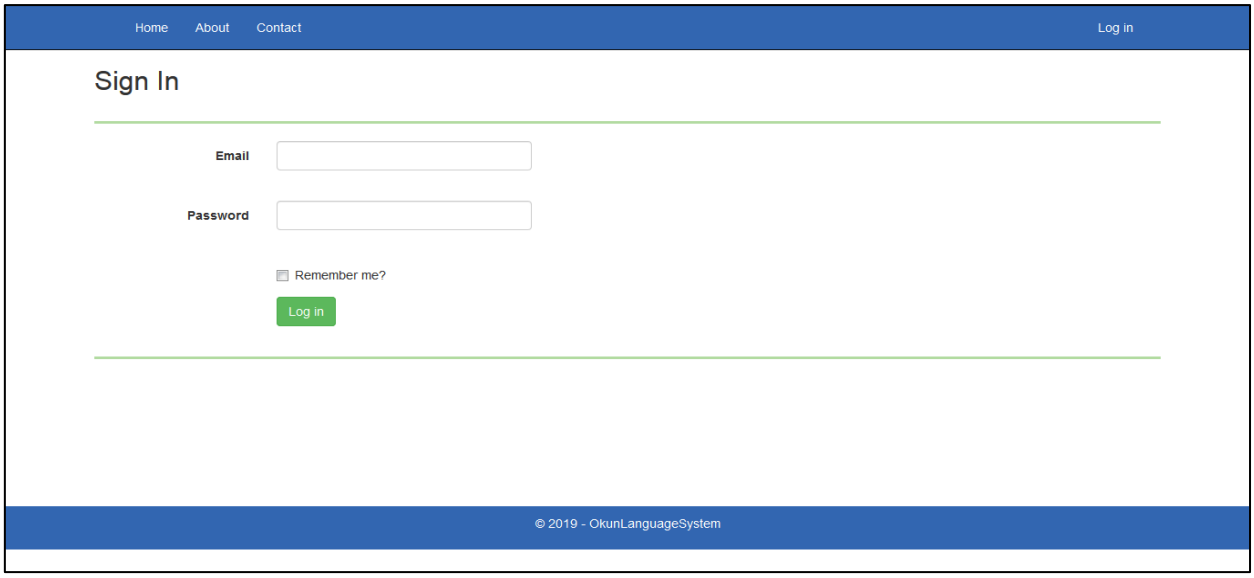


Fig 2. Showing the login interface

Upon Successful login the Admin will be directed to the Dashboard. This is where the Admin can interact with the database by adding words, phrases, sentence alongside with their equivalent Okun translation.

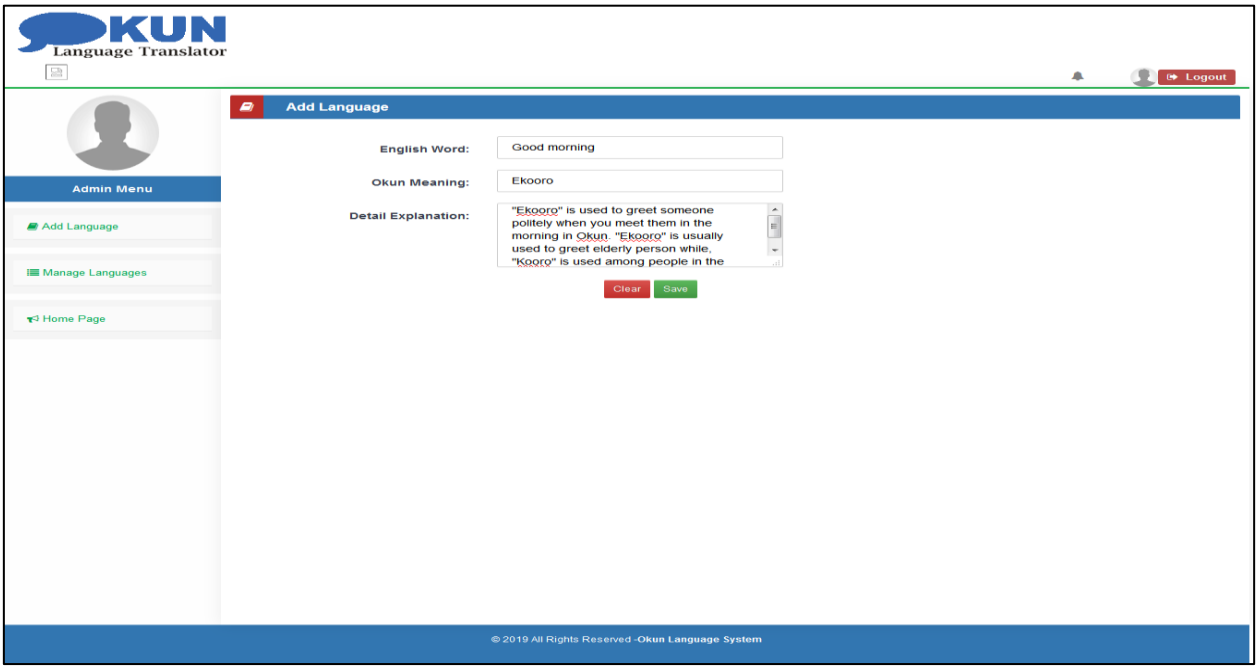


Fig 3. Showing the Admin interface

All the records are mapped to this page where the Admin can access some basic features of the application, such as searching, editing, and deleting.

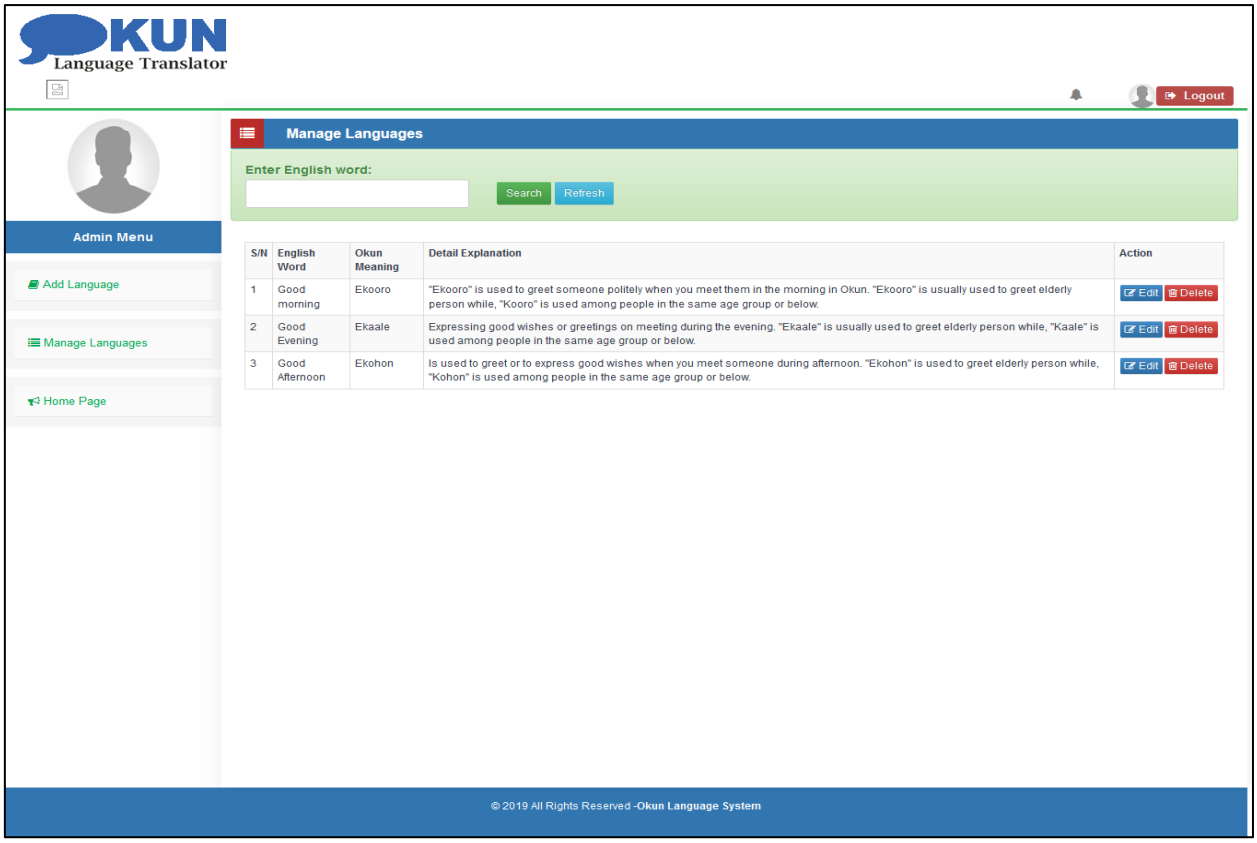


Fig 4. Showing the Admin interface

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