IMPROVEMENT PLAN PROJECT "Automation and market opportunity analysis through the TAM SAM SOM methodology for new business development."

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Introduction

Globalization has allowed companies to develop processes in order to be competitive and position themselves in the market. The high demand and supply of products and/or services have created the need to seek methods where skills such as adaptation and optimization play an important role in generating value for the company. Likewise, the creation of strategies to optimize resources will be reflected in cost reduction and in the efficiency with which projects evolve, as well as in the way they respond to market needs.

Nowadays, thanks to important technological advances, value has been generated in the development of business processes, allowing the automation of processes for the extraction of data that produce valuable information for companies, allowing them to identify opportunities to enter international markets, as well as decision making, the efficient adaptation of strategies and the development of innovative business models to meet market demand.

The TAM SAM SOM is a model that has generated a great impact on business models as it allows companies to define the size and scope of the target market they wish to reach with their products and/or services, which is why elements as important as the data collected and a good analysis generate market visibility, where from that, measures are taken for the implementation of projects and strategies are proposed, capabilities and entry methods are identified, and decisions are made that generate business opportunities which are exploited by companies that are increasingly in a competitive international market.

This project seeks to propose an improvement plan through the automation of the TAM SAM SOM with the purpose of developing projects focused on the health sector in the Biosciences area in a short time through data extracted from official sources, in this case CEPAL is used as a source, where through its API obtained from its CEPALSTAT database, the collected data is extracted and will be evidenced in a dynamic Power BI dashboard through interactive graphs that allow a better analysis of the information.

General Objective

• To develop an interactive dashboard for the visualization and analysis of relevant statistical data with the TAM, SAM, and SOM model in projects targeted at the health sector

Specific Objectives

- Select the source of information and indicators for the construction of the interactive dashboard that allows the collection of clinical and socio-demographic data.
- To identify the importance of the interactive dashboard for the creation of projects in the Biosciences area for the development of new business models and opportunities in the Latin American market.

Methodology

The methodology used for the improvement plan was a mixed approach, as it incorporated both qualitative resources, such as the search for concepts in literature, where different authors discussed the TAM, SAM, and SOM model and its implementation and importance in various fields, as well as quantitative resources, such as the extraction of data from CEPAL like demographic, health, and economic indicators were gathered to build a digital dashboard in Power BI, making the information more interactive and practical for use in health sector projects and to have a vision of new international markets .

Company: "SERVICIOS DE SALUD IPS SURAMERICANA S.A.S."

Servicios de Salud IPS Suramericana S.A.S is part of the healthcare sector in Colombia. Its main function is to provide medical services to individuals and companies, offering excellent comprehensive care. All services provided by the IPS are backed by SURA. To meet the needs of its clients, various lines of service have been created to offer the best healthcare services. These include: Corporate IPS, Visual Health, Vaccination, Preventive and Occupational Medicine, Executive Check-up, and SURA Healthy Living (SURA, 2024).

One of the company's main pillars is its focus on innovation, aiming to provide disease prevention measures and risk management. One of its most recent and innovative projects was the creation of a new space in 2023 called the "Omics Science Center," with the objective of developing predictive models focused on genetic studies, where genes can help identify potential health conditions (SURA, 2023).

History of Grupo SURA

- In 1944, in Medellín, Colombia, several business leaders gathered to establish the "COMPAÑÍA SURAMERICANA DE SEGUROS S.A." where they stood out for their role in insuring major sectors of the Colombian economy. Years later, they created the "Banco Industrial Colombiano," which was later renamed "BANCOLOMBIA."
- In 1970, the challenge arose to protect the property of minority shareholders to prevent them from being absorbed by large investors.
- In the 1980s and 1990s, Colombia faced the phenomenon of drug trafficking, an uncertain scenario, but this reinforced the company's commitment to remain in the country and to generate investments. In the 1990s, a new social security system was created to provide coverage for health, pensions, and occupational risks.

Figure 1

Social Security System: Past and Now



Note. Image taken from SURA (2024)

- In 1997, Grupo SURA was created as a holding company to manage its investment portfolio. Together with Bancolombia, it decided to create the leading financial network in the Central American market.
- In 2008, after the economic crisis, the assets of the Dutch group ING were acquired in five Latin American countries (Mexico, Peru, Colombia, Chile, and Uruguay), which led to the creation of Sura Asset Management in 2011.
- In 2015, the assets of RSA were acquired, consolidating insurance operations under SURA in nine countries.

Currently, the SURA-Bancolombia financial conglomerate encompasses the financial businesses in which Grupo Sura invests. An important factor is that although Grupo SURA invests in Bancolombia, it is not a subsidiary since Grupo SURA is not the majority shareholder. In this way, Grupo SURA has sought to invest in various projects to generate greater opportunities, such as the "VENTURES" program, which aims to invest in businesses to promote the growth of the SURA-Bancolombia conglomerate.

The division of Grupo SURA as follows:

- Financial: Grupo Bancolombia, Sura ASSET MANAGEMENT and Sura SEGUROS, TENDENCIAS Y RIESGOS.
- Industry: Grupo Argos and Grupo Nutresa
- Ventures: Ventures|Sura

The company is present in 10 countries in Latin America: Mexico, El Salvador, Panama, Peru, Dominican Republic, Colombia, Brazil, Chile, Argentina and Uruguay. The head office is located in Medellin, Colombia and Sura covers 5 regions of the country which are: North, Eje Cafetero, West, Central and Antioquia.

Grupo SURA has consolidated a commitment to people and businesses by providing services that promote their well-being, establishing four pillars in its ethics and corporate governance: **responsibility, respect, equity, and transparency**. These principles aim to ensure that the company acts in the best way to foster the well-being and sustainability of its stakeholders. Likewise, SURA is expected to deliver well-being and competitiveness through the management of trends and risks and the development of human talent. The company brings together three important forces: technology, society, and the environment. These three elements drive the megatrends emerging globally, which bring changes in consumption and business models. For this reason, it is necessary to stay updated on trends in order to provide good service to the people and companies that trust in Grupo SURA.

Biosciences Area

The area where I perform my duties is the Center for Biosciences, focused on developing new business opportunities, specifically in market trends and environments. My work involves research and the development of business models to inform decisions regarding the launch of products and/or services that positively contribute to the healthcare sector.

The Biociences area has been around for about 3 years and has been one of the most innovative businesses for SURA. It encompasses different approaches such as the clinical research area, digital imaging, technology surveillance, data science, and the ethics committee. Each of these areas seeks to generate projects that enable the Biociences unit to participate in international events or projects aimed at improving human and animal health. Additionally, it is an area where the creation of strategic alliances is sought, allowing for the generation of new businesses and cooperation between the involved parties

I'm currently involved in 8 projects, 5 of which I lead and 3 are team-based. My role focuses on seeking internationalization strategies to leverage new health products, having a market vision by analyzing demand, supply, and direct competitors, as well as identifying events, symposiums, or congresses where the Biosciences area can participate through clinical trials and other activities. My area of environment and trends is transversal, allowing me to support other departments, enrich my knowledge, and foster good relationships with all kinds of people.

Figure 2

Organization Chart



Note. Image taken from SURA (2024)

Apprentice Functions:

- Support the development of new healthcare businesses by understanding the market and environment to generate innovative and sustainable solutions that address the needs of the healthcare sector, analyzing their applicability and viability.
- Conduct market research to identify trends, opportunities, and challenges in the HealthTech sector.
- Analyze competitors and evaluate emerging technological innovations.
- Participate in the conceptualization, design, and implementation of innovative projects, collaborating closely with multidisciplinary teams.
- Promote innovation, sustainability, and technological adaptation in the healthcare field.
- Stay up to date on the latest trends and technological advancements in the healthcare sector.
- Identify and analyze new technologies and their potential application in the healthcare market.
- Present the results of technological monitoring to the R&D team and relevant stakeholders, facilitating strategic decision-making in the development of new projects.
- Conduct interviews and surveys with clients to understand their needs and expectations.
- Manage process and outcome indicators.
- Support ideation, prototyping, and development processes of the Directorate.
- Assist in assigned activities of the department.

Improvement Plan

Companies need to be increasingly efficient in the development of new projects, where resource optimization and time are valuable elements for achieving goals. At the Center for Biosciences, a problem has been identified regarding the collection of statistical data (population, birth rates, mortality, disease incidence, among others) that are necessary to identify the market and, in turn, the viability of a business idea. It is important to highlight that the data collected is at an international level, specifically from countries in Latin America where SURA has a presence, which also allows for greater business opportunities.

Taking the above into account, the company applies a matrix called TAM SAM SOM, a concept that originated to analyze, understand, and identify opportunities in the target market by implementing marketing techniques. This model is mostly used by startups, and although there is no clear founder associated with it, it is linked to Alexander Osterwalder, the creator of the Canvas Business Model. The reason for this association is that while the Canvas Model is successful for the product-market relationship, it is essential to ultimately know which niche is expected to be successfully reached by seeking the best entry methods Forbes. (2022).

Literature where TAM SAM SON has been implemented

TAM SAM SOM has been used to estimate market size and identify opportunities or potential when entering a market. Several articles have mentioned the applicability of this matrix, such as the article "Market size estimation of irrigation systems used in fruit and forest plantation in dryland," which discusses irrigation systems used in fruit and forest plantations in drylands. In this case, TAM SAM SOM was applied as follows:

- TAM: Total market size for cultural care aimed at preventing damage from water stress.
- SAM: Market size for seedling irrigation using non-conventional systems.
- **SOM**: Market size for seedling irrigation achievable with non-conventional irrigation technologies given the level of technological adoption.

The development of TAM SAM SOM allowed estimating that by the year 2025, the total market could reach 1.19 billion dollars through the market for cultural care technologies in planted forests and fruit trees. In conclusion, the market is dominated by small and microenterprises, mainly in China, India, and the United States, and these companies may have greater expansion opportunities if they focus on fruit trees or the offering of technology for cultural care (Del Río San José, et al, 2019)

In the article "Valuation of Utility Tokens based on the Quantity Theory of Money" of Jay Pazos (2018), the importance of utility tokens and the networks that support them is discussed to increase transparency in initial coin offerings, aiming to improve the development of digital assets. For the study, an example was conducted with StereoWorld, a company that develops 3D images through videos taken with a smartphone. The company wants to issue a utility token called STO, where advertisers can pay for ads, and token holders will have the power to choose the implementation of new platforms. In this case, TAM SAM SOM was applied as follows:

- **TAM**: Monthly active users on the Facebook platform at the end of 2017, totaling 2.023 billion people.
- **SAM**: Monthly active users on the Facebook platform in the United States and Canada, amounting to 239 million people.
- **SOM**: 3% of the SAM, which equals 7.17 million people.

After conducting the TAM SAM SOM, the company concluded that the value of the token would appreciate significantly over time and that in three years, the company would have a valuation of 15.1 million dollars. The initial value of the STO token will be \$0.151. The effectiveness of this model will rely on the management and optimization of the token to ensure it is valued in the market .Finally, it is important to highlight how a good market size study allows for the development of strategies in token implementation for the development and valuation of digital assets (Pazos, J. 2018)

Figure 3

TAM SAM SOM



Note. Original Development Based on the Data Obtained from Foundation Marketing (2024).

The problem with TAM, SAM, and SOM is that the data collection, according to the type of research required for the new business model, is time-consuming, taking about 2 to 4 weeks to develop this matrix that allows for decision-making. This prolongs the process or the filters that the business model must go through, delaying its market launch.

It is important to highlight aspects such as indicators or selection criteria, as many of them are fixed and crucial for analyzing the business opportunity. The goal is to systematize the information using reliable databases and seek support from Power BI for the development of the solution, presenting the information clearly and dynamically through graphs.

Improvements Functions

To improve company procedures, it is necessary to automate various processes required in the development of a project. The time for data collection is lengthy because much of the data is complex to find when searching for official information on government websites of each country, as well as synthesizing the information into tables to compare which countries would offer the best business opportunities.

Thanks to technological advances, it is possible to streamline processes, resulting in time and resource savings for project execution. When matrices need to be created and some information is not available, it causes difficulties and delays. However, these issues can be addressed with good management by utilizing tools such as artificial intelligence, automation software, cybersecurity, and keeping technologies updated to ensure optimal company development.

Proposal

Due to the extensive nature of data collection and the time required for its execution, the proposed solution to this problem involves several steps, which are:

Step 1: Identify or map the pages where it is necessary to collect the information needed for the company, analyze the selection criteria, and conduct an extensive search for those indicators. Some of these indicators include: population, the number of men and women by country, birth rate, mortality rate, income level, among others. Each of the selection indicators must be searched by country, focusing on Latin American countries in this case. In the projects, TAM, SAM, and SOM are divided as follows:

- **TAM** = Latin American countries (20 countries)
- **SAM** = Selected countries based on indicators where better business opportunities are analyzed
- **SOM** = One or two countries are selected to begin the execution of the project

Step 2: After analyzing the information desired from the pages, a REST API (Representational State Transfer) is used to collect the information. A REST API is an interface between systems that uses HTTP to access data or perform operations on it, compatible with a wide variety of formats (Monción Rodríguez, C. L. 2023). The goal is to identify the API of the web pages from which the information is to be obtained, send the HTTP request, process the response in JSON format to extract the data, and finally export it to an Excel file.

Step 3: Once the data is exported to Excel, it should be organized in tables. The cells must contain data, and clear and descriptive names should be used for the columns and tables, as these will be used in the Power BI graphs. In Power BI Desktop, select the "Get Data" option and choose the organized Excel file with the data, then select "Connect."

Step 4: After obtaining the Excel data in Power BI, visualizations can be created, such as bar graphs, pivot tables, and more.

An important factor is that Power BI data updates when the Excel file is updated, thanks to the automation of the update. This allows the information obtained from the web pages to be constantly updated, which will be reflected in Excel, and Power BI will display the information in a more interactive manner.

Finally, this process will help optimize the time spent searching for information required by the projects, as the data will already be available in Power BI. In addition to being updated, the information is displayed in a different, more organized format according to the selection criteria. The analysis of TAM, SAM, and SOM would take less than a week.

Process Actors

Actor #1

- Role: Area Leader
- **Function:** He is responsible for determining the selection criteria or indicators that Power BI must include for the development of future projects.

Some of the recommended databases for data extraction are: World Health Organization (WHO), World Bank (WB), CEPAL, Pan American Health Organization (PAHO). Finally, the CEPAL source is selected to search for data from LATAM countries for the following indicators:

- Population (age and gender division)
- ➢ Income
- \succ Birth rate
- > Mortality rate
- Diseases
- Life expectancy by gender
- Deaths due to diseases
- Maternal deaths

Actor #2

- Role: Business Development Intern
- **Function:** She is in charge of searching for selection indicators, compiling all possible information from reliable sources and synthesizing it. Taking into account the selected base, which is CEPAL, the search for indicators is carried out where the complete information is shown and from previous years to perform an analysis of the behavior of the criteria, then the information will be presented to a programmer to extract it through the API that has the website of the organization.

Actor #3

- **Role:** Programmer
- Function: He is responsible for searching in the CEPAL web page if it has an API to extract the data, after extracting them, organize the indicators in Excel of the countries of interest, in this case, the countries of Latam, to finally pass them to a Power BI dashboard to be more interactive the information of the indicators selected by the leader of the area.

"Process for the creation of the interactive dashboard - TAM SAM SOM"

Step #1: A detailed exploration of the CEPAL web page was carried out, with the objective of identifying the existence of an API to access clinical and sociodemographic data; the review included an analysis of databases and digital resources, in order to find references of automated extraction. In addition, the technical documentation was evaluated to understand the structure, functionalities, authentication methods and possible limitations of access to the required data.

Figure 4

CEPALSTAT United Nations ECLAC Statistics Division CEPALGEO Home About Español | English CFI Statistical Databases and Publications ECLAC A STATISTICS AND INDICATORS -REGIONAL PROFILES -COUNTRY PROFILES -GEOPORTA METHODS & CLASSIFICATIONS PUBLICATION OPEN DATA/API November 12, 2024 | EVENT November 08, 2024 | EVENT October 14, 2024 | INFORMATION RESOURCE NEWS Fifth UN World Data Forum 2024 UN Datathon 2024 CEPALSTAT provides users with access to subnational MAIN FIGURES OF LATIN AMERICA AND THE CARIBBEAN **GDP ENERGY INTENSITY** TOTAL EXTREME UNEMPLOYMENT GDP GROWTH RATE CPI GROWTH RATE POPULATION POVERTY RATE 10.6% 6.4% 5.2% 2.2% 2023

Note. Image taken from CEPALSTAT (2024)

Figure 5

CEPALSTAT



Note. Image taken from CEPALSTAT (2024)

Step #2: The resource can be found on the web page, where the endpoints are indicated.

Figure 5 CEPALSTAT Open Data/API \varTheta Swagger https://api-cepalstat.cepal.org/apispec_1.json CEPALSTAT API - Public 600 000 CEPALSTAT Restful API Indicator Endpoints que exponen entidades de un Indicador específico en CEPALSTAT, como notas, fuentes, dimensiones, etc. / Endpoints that expose entities of a spe CEPALSTAT, que a s notes, sources, dimensions, etc. GET /cepalstat/api/v1/indicator_id}/areas Retorns una ista de áreas de un indicador determinado. / Returns a list of areas of a given in GET /cepalstat/api/v1/indicator /{indicator_id}/data Retorna data, metadata, dimensiones, fuentes y notas de un indicador det notes for a given indicator.. GET /cepalstat/api/v1/indicator/(indicator_id)/dimensions Retorna lata de dimensiones de un indicador determinado. / Returns lat of dimensions of a given indicator. GEI /cepalstat/api/v1/indicator/{indicator_id}/footnotes Retorna lista de notas de un indicador determ GET /cepalstat/api/v1/indicator/(indicator_id)/metadata Reterna metadata de un indicador determinado. / Returns metad GEr /cepalstat/api/v1/indicator/(indicator_id) /publications elated to a giver Retorna lista de publicaciones rela onadas con un indicador det GET /cepalstat/api/v1/indicator/(indicator_id)/records Retorna registres de un indicador determinado. / Returns records of a given indic GET /cepalstat/api/v1/indicator/(indicator_id)/sources Retorna lata de fuentes de un indicador determinado. / Retu tes for a siven indi Main En entidades de CEPALSTAT / Endpoints that expose CEPALSTAT entities GET /cepalstat/api/v1/thematic-tree Reforms árbol lamático de areas e indicadores. / Refurms thematic tree of areas and ind Note. Image taken from CEPALSTAT. (2024)

Step #3: Postman software is used to test the API, as well as to identify the structure, accessibility and availability of the data in order to process and adapt it to the requirement.

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- > Step #4: We defined the following parameters
- Total countries: 17
- Total population
- Division by gender
- Division by age
- Birth and death rates
- Life expectancy by gender
- Monthly income: Deciles
- Maternal deaths
- Mortality rate by disease: cancer, diabetes, cardiovascular diseases, chronic respiratory diseases
- Step #5: The Postman software and the endpoint thematic tree of the CEPAL API are used to identify the ID of the indicators, then the "indicators.csv" file is created where the data is stored.



> Step #6: We define the following required parameters

Table 1Indicator parameters

Parameters	ID	
Population divided by age groups and	4789, 28	
gender, and demographic area		
Income divided by gender	3291, 4051	
Birth rate	4787	
Mortality rate	Division by:	
	Life expectancy 4784	
	Number of deaths per thousand	
	population 4785	
	Infant mortality by gender 4790	
	Maternal mortality 2912	
	HIV mortality 4144	
	Number of deaths by disease and gender	
	3764	

Note. Original Development Based on the Data Obtained from CEPAL (2024)

Step #7: A folder was created for the project, where all the files extracted later from the API will be inserted, and a programming environment is generated in Visual Studio Code and started with the following code.

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Step 8: The corresponding code is made, the programming logic is to make the two requests to acquire the metadata and the indicator records, a resource file "indicators.csv" is used to iterate and consolidate the database, the metadata is saved with its ID CEPAL while the records under the descriptive name of the same.



Step 9: At this point we have all the necessary data to create the dashboard in PowerBI, however, it is necessary to perform a customized preprocessing to each of the csv files with the records, so we proceed to analyze each one of them.

Table 2

Preprocessing of the csv files

Parameter	Definition	Preprocessing		
Maternal mortality	Value of maternal	To make the statistics more		
rate	deaths per 100,000	practical, the values are divided		
	births	by 10, in this way we obtain		
		deaths per 10,000 births.		
Average monthly	Division by gender not	We multiply the value of the		
income	available, division is	corresponding year of the		
	given by population	national income with the		
	deciles, being 1 the	percentage of each decile for that		
	decile with the lowest	year, that value would be the		
	income and 10 the	average annual income of the		
	decile with the highest	decile, therefore we divide it by		
	income.	12 to make it monthly, and finally,		
		that value will be the		
		corresponding monthly average		
		income of the decile, therefore, if		
		we want the per capita value, we		
		divide it by (population*0.10) of		
		that same year.		

Note. Original Development Based on the Data Obtained from CEPAL (2024)

Step 10: A database model is made to connect the IDs between sources



Step 11: It starts with the construction of the Power BI dashboard where the indicators of interest for the Biosciences unit are shown, evidencing interactive graphics that allow a better analysis of the data and decision making.



Main Findings and Results

- The implementation of this visual dashboard for the TAM, SAM and SOM allowed reflecting important data that are general and key for the execution of projects focused on the health sector, this is how this dashboard, by highlighting variables such as population, birth and mortality rates, income levels, mortality due to diseases, among others, generates a quick analysis by having real-time access to each of the indicators extracted from the CEPAL database repository (CEPALSTAT), one of the most important sources for obtaining data for the execution of projects.
- The creation of this interactive dashboard reduced the time in extracting the data shown on it, as previously users had to manually access the website, select the important data for each country and enter it in an Excel file, this process had to be repeated for each TAM, SAM and SOM when data was needed, but with this dashboard, which shows information for 17 Latin American countries with relevant indicators, the creation of the TAM, SAM and SOM for different projects has become much easier and practical.
- The data consolidated in a dynamic dashboard, together with comparative tables of important indicators such as population, birth and death rates for the most common diseases such as cancer, diabetes, cardiovascular diseases and chronic respiratory diseases, allows a quick analysis of the TAM and SOM, allowing to focus the research quickly with a clearer business path and identify opportunities in the selected countries to analyze the feasibility of the projects.
- Although the main objective of the interactive dashboard is to obtain real-time data grouped in a file for the creation of TAM, SAM and SOM, it is also a useful tool to analyze other business models, such as SURA's internationalization in different Latin American countries, taking advantage of indicators extracted from official sources, and where this dashboard helps to identify market opportunities, entry strategies, potential clients and services that can be offered in Latin American countries where SURA is not yet present but has great interest in providing its services.

Conclusions

- The implementation of the TAM, SAM and SOM is a useful method to analyze the target markets of various projects in the Biosciences area, it is very important to recognize the business model that is implemented and identify the potential of the tool that consolidates data from official sources that allow decision making, through the interactive dashboard, the information is available immediately, consolidated and in real time, which optimizes the process of creating the model for different projects in the health sector.
- The implementation of an interactive dashboard, where the information is consolidated in an automated way from web pages where specific data is required, eliminates the need to extract data manually from each page, which optimizes the time of extraction and search of information, likewise, it generates an advantage in the reduction of time in the development of the TAM SAM SOM by having the data available and constantly updated through the use of the CEPAL API, it is much more practical the creation of business models without repeating the same process for each one.
- The Biosciences area considers useful to have resources such as digital dashboards with data that streamline processes in the search for new international opportunities, for the moment, its focus has been on Latin American countries, so the panel is focused on Central and South American countries, its goal is to expand to different territories offering excellent service and the general indicators that are evidenced are very useful for the expansion of the area, which is a new field in SURA with great potential for various projects aimed at improving people's health.

Recommendations

- Biosciences manages many health projects, where some of them have already gone through the phase of "understanding" which is where the feasibility of the project is analyzed and also where the market analysis is performed, other projects are in the process of validation of information to begin with the identification of the target market, but in both cases are in different folders, it would be advisable to consolidate in a single dynamic board all the TAM SAM SOM, where the areas that make up Biosciences can access different data and in turn display on the dynamic boards, the data generated previously. The purpose is that the information is grouped for better management and optimization of the time required to create the TAM SAM SOM and continue with the process of developing new business.
- Check that the database is updated with the page from which the data was extracted, because although the API generates the link between the web page where the information was obtained and the interactive Power BI dashboard, it is necessary to make a periodic review to ensure the proper functioning and that the data that is evident in the dashboard is correct to provide real data and allow the execution of projects from them.

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