

Cross-border acquisitions in technical engineering sector: motives, trends and effects in finnish consultancies

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Abstract. The objective of this study is to explore the cross-border acquisitions - purchases and sales - of Finnish engineering consulting firms during the years of 1997-2006 in terms of the amount of transactions and the geographical distribution of acquiring and target nations. The focus area of the study - the technical engineering and consulting business - is a significant sub-sector of technology-related knowledge-intensive business services, which have strongly gained the interest of both practitioners and academic researchers in recent years. The methods utilized in this study consisted of literature reviews in the above-mentioned focus areas, the deal analysis of Finnish engineering consultancies on the basis of Thomson ONE Banker database, as well as the use of secondary data such as annual reports and expert opinions for complementing the analysis. The motives and intended effects of acquisitions were studied and compared to literature reviews and general industry characteristics. Results show that product and market extensions are the most significant types of cross-border acquisitions, which is in line with the existing literature. Expansion and other strategic motives can be seen in the study, but in spite of the increased significance of knowledge-intensity and innovativeness in many industries, knowledge acquisition for promoting innovation and R&D capabilities is not so apparent in the motives. Moreover, the geographical distribution in the Finnish sample does not yet clearly indicate a global movement of the industry towards the east. However, the strategies for market extensions of these knowledge-intensive firms in many cases seem to be implemented by other types of organizational changes than cross-border acquisitions. The results of the study provide several possibilities for in-depth further studies of the motives and effects of acquisitions and future comparative studies of other geographical areas.

Keywords: Engineering, services, mergers, acquisitions, M&A, cross-border

1 Introduction

Technical engineering firms (engineering consultancies) produce services which cover a wide range of often specialized and technology-based activities, including e.g. research, technical design, planning, consulting guidance and supervision, and varying aspects of project management. Technology and engineering consulting services belong to a larger group of knowledge-intensive business services (KIBS). Practically, the service firms provide knowledge, know-how and expertise of their staff to their clients. In these types of services, the focus of operations is typically in value co-creation with the clients, and the markets for engineering services are primarily related to the growth of their client industries. However, recent changes in market conditions and industrial structures have forced technical engineering firms to rethink the business models and mechanisms they use to respond to their customers' and other stakeholders' needs. A major trend is that firms focus on their core business activities and outsource the others, which increases the demand for knowledge-intensive business services^[1]. Also, increased outsourcing by major client firms has led to ever larger assignments and contracts, which only larger engineering firms can handle.

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The effect of business cycles has been particularly strong on the profitability of engineering firms. This weakness may, however, to a certain extent be overcome by forming networks between firms in different sub-sectors or by broadening the market area (i.e., by acquiring new foreign customers). Indeed, another recent trend has been the internationalization of operations. It has been achieved primarily via two different strategies: client following or market seeking. In other words, engineering consultancies have either followed their major domestic clients that have been carrying out projects abroad and then expanded their international activities on the basis of these client relationships, or they have adopted market seeking strategies and expanded their business in markets such as the fast-growing economies of e.g. East and Southeast Asia^[1].

Both increased outsourcing and internationalization of services are important drivers that have led to a rapid consolidation in the technical engineering industry. Especially larger firms have increased in size and number by strategic growth and mergers and acquisitions (M&A). Among the main advantages of external growth by means of acquisitions are instant access to new markets and the possibility to quickly gain new expertise and enhance innovation capability. From an operational point of view, these advantages can be considered as revenue-based synergies of M&A, in contrast to cost-based synergies, which refer e.g. to the elimination of redundant activities and inefficient management practices^[8]. However, at the same time M&A involve substantial risks. For example, differences in organizational cultures and values, and poor planning of the integration process may easily lead to the failure of a merger. Moreover, since the competitive advantage of engineering consultancies does not lie so much in tangible assets but in educated and highly mobile professionals, there is an even higher risk of failure in M&A transactions in this sector^[9]. In particular, international acquisitions (cross-border M&A) pose several challenges because, in addition to considering organizational factors, they require knowledge of the local business environment and legislation as well as of cultural differences.

The objective of this paper is to explore the recent cross-border acquisitions of Finnish engineering consulting firms (both purchases and sales). Our aim is to analyze the geographical structure of these deals, as well as the types of acquisitions (e.g. horizontal, vertical, unrelated, etc.). First, we will review the main types and motives for international M&A (especially in the technical engineering sector) that can be found in the literature. In the empirical part of the study of cross-border acquisitions in the field we will first discuss the structure and characteristics of this industry sector and then present the deal analysis of Finnish engineering consultancies on the basis of Thomson ONE Banker database as well as the further analysis of secondary data such as annual reports and expert opinions for complementing the data. Finally, conclusions and suggestions for further research areas will be presented in the end of the paper.

2 Mergers and acquisitions

2.1 Acquisitions vs. other growth mechanisms

When considering the motives for acquisitions in technology-related services, it is also important to discuss different mechanisms of corporate growth. First, engineering consultancies may choose to grow internally, i.e., to extend their business step-by-step by hiring talented people and by making structural changes in internal operations. They may also put more effort into marketing and the development of new services. Secondly, companies may choose external growth through acquisitions and mergers. The decision between these modes of growth usually depends on various factors, such as possible constraints to internal development (e.g., a limited range of operating routines), and whether the current market for acquisitions in the industry is favorable. From a resource-based view, one of the main advantages of acquisitions is that they enable a company to obtain valuable resources more quickly than by developing them through internal capital expenditure^[5]. On the other hand, while these growth options are usually seen as strategic alternatives (competing for funds), some firms pursuing aggressive organizational and business growth may also view acquisitions and internal growth as complementary strategies. Furthermore, constructing collaborative networks without formal acquisitions is an alternative between the internal and external growth, which can also occur in the form of new joint ventures. Collaboration and acquisitions can generally be horizontal or vertical in terms of their type (see below).

There are relatively few empirical studies on the growth strategies in the engineering consulting sector, but e.g. Kreitl et al. found that growth of the largest engineering firms in Europe has largely been achieved organically, and that this is also the most successful mode of growth^[10]. However, in the same survey study the authors note that growth through M&A is important as well (compared to other modes of growth, such as engaging in joint ventures) and contributes to the firm success. Out of the total 44 respondent firms, 34 (77%) had carried out at least one M&A transaction (on average over 4 acquisitions) in the period 1990-1998. It was also found that the M&A activity of engineering consultancies increased with the firm size. The more surprising finding, however, was that none of the firms which had made acquisitions considered this mode of growth as totally unsuccessful. Since the failure rate of M&A is generally fairly high, the authors therefore echo the earlier research findings about M&A and suggest that managers of service firms may be more sensitive to cultural aspects of acquisitions than managers from manufacturing industries.

2.2 Types of M&A

There exist several categorizations of different acquisition types based on the relationship of the firms involved. In general, however, acquisitions can be horizontal, vertical, or conglomerate. This is also the basic categorization of the Federal Trade Commission (FTC), in which there are five types of M&A (see e.g. [14], pp. 22-23). The types are the following (M&A in the last three categories are all regarded as conglomerate of greater or lesser purity):

- Horizontal: The acquisition takes place between two firms which produce one or more of the same, or closely related, products in the same geographical market.
- Vertical: The two companies had a potential customer-supplier relationship prior to the deal.
- Product extension: The acquiring and acquired companies are functionally related in production and/or distribution, but have non-competing products.
- Market extension: The companies manufacture the same products, but operate in different geographical markets.
- Other, or pure conglomerate: The companies are essentially unrelated in the products they produce and distribute.

In the engineering consulting sector, the horizontal acquisition may take place e.g. between two firms specialized in infrastructure planning. An example of vertical acquisition could in turn be the acquisition of a small, specialized supplier firm in a particular sector (e.g. environmental engineering) that would create value to a larger consultancy providing large-scale industrial investment projects through a turn-key contract to their customer.

2.3 Motives for M&A

Since M&A are complex processes, there exist in the literature a number of theories about acquisition motives. For example, the taxonomy of acquisition motives presented by Trautwein identifies seven different theories explaining acquisition activity^[17]. First, there are theories that explain acquisition activity as a result of rational choice and they either emphasize the benefits of acquirer shareholders (1. net gains through synergy, 2. wealth transfer from customers, 3. wealth transfer from target's shareholders or 4. net gains through private information) or the benefits of managers. There are also theories that explain acquisitions not as a result of rational choice but as a process outcome or as a macroeconomic phenomenon. Yet, this classification of acquisition motives has several shortcomings (e.g., the exclusion of the selling motives of the target firm). Häkkinen therefore proposes a more comprehensive summary of potential objectives behind horizontal cross-border acquisitions^[7]. The following classification (adapted from [7], p. 38) especially tries to take into account the viewpoint of an acquirer company's management:

(1). Expansion and development

- geographic and/or product expansion
- client following

- redeployment of resources² to/from target
- convergence of new, emerging industry

(2). Increased internal efficiency

- economies of scale and scope

(3). Improved competitive environment

- increased market share or market power
- achieving size required for global competition
- defense mechanism
- acquisition of a competitor
- pre-empting competitors
- creating barriers to market entry
- reducing industry overcapacity
- benefits from cost differentials (e.g. labor)

(4). Financial motives

- diversification of risk
- investing in faster-growing economy
- turnaround of a failing target

(5). Personal motives

- increased sales and asset growth
- gaining personal power and prestige
- cashing in on short-term stock market reactions through incentive system

(6). Other

- circumventing protective tariffs, quotas, etc.
- benefiting from exchange rate differentials

It is fairly common that more than one of these objectives may simultaneously affect the acquisition or merger decision. More importantly, however, the motives for carrying out M&A transactions and the emphasis on different objectives vary between firms and industries. Since typical general criteria that form the competitiveness of engineering design companies are professional staff references, project references of the company, details of the offer, and price, the importance of acquiring good people and their expertise in the business of selling knowledge is obviously stressed. Therefore, it is evident that the acquisition of experts is more often a highly ranked motive in engineering consultancies and other professional service firms than in other, more capital-intensive (service) firms. Indeed, in the study of McCann the acquisition of expert talent was ranked the second most important M&A motive for professional services firms, preceded only by increased market share^[12].

A comprehensive study of the acquisition motives and their relative importance in the engineering consulting industry was done by Kreitl and Oberndorfer^[9], who surveyed the top 100 engineering consulting firms in Europe (measured by number of employees). The authors found that the most important motives for acquisitions were diversification into new service/client markets as well as the penetration into new geographic markets. Also increasing the firm's market share and the acceleration of growth were among the most popular motives. Acquisition of expert talent was the sixth most important motive, after broadening customer base for existing services. However, e.g. easier access to large-sized projects and geographic closeness to major clients were scored as being of only moderate importance by the respondents. Financial motives, such as investing of excess cash and tax savings, were considered the least important motives of the listed 14 possible motives in the questionnaire (note: some motives mentioned to be of high importance in other industry sectors, such as cost reduction/decrease and the extension of R&D capacities, were not included in this study). While the

² e.g., stocks of knowledge, human resources, financial and physical assets

survey showed that many motives (e.g., the increase of market share or the acceleration of firm growth) are just as important for engineering consulting firms as for firms of other industry sectors, it also revealed that there are significant differences in the patterns of M&A activity between the engineering consulting industry and other industries. In particular, one of the findings was that no acquisition of the vertical type or the unrelated type was carried out by the surveyed firms between 1990 and 1997. In other words, the surveyed engineering consulting firms only merged with or acquired another engineering consulting firm. This is in contrast to most other industry sectors.

On the other hand, recent changes in the industry structures have also stressed the significance of vertical types of changes in engineering firms. New specialist skills related to both downstream and upstream services that e.g. engineering and design firms provide are also needed in today's competitive environment in addition to the technical skills to implement a project. Upstream services can be related to the early stages of project development and financing, and downstream services to facilities and life-cycle operation costs management^[6]. The demand for new skills and innovations is driven by the pressures on the supply and demand sides.

3 Cross-border M&A in the Finnish technical engineering industry

3.1 Industry structure and growth

On a global scale, we can say that both production and services are moving eastwards^[15]. Larger firms in the consultancy sector have focused their attention on the new fast-growing economies in Eastern Europe, Russia and Asia. These larger engineering firms often own foreign affiliates and undertake projects at home as well as abroad, whereas small firms, on the other hand, typically operate on the basis of specialized knowledge and expertise in a limited domain and primarily serve a limited local market. Large and small engineering firms therefore have usually quite a different focus in their activities. The following table depicts the world's largest firms in engineering and architectural fields. The internationalization of companies in recent years has also included plenty of mergers and acquisitions. Consolidation in the industry is likely to continue as a major trend. As seen in Tab. 1, the largest consultancies are very large and nine of the world's ten largest firms in the industry are considered multi-disciplinary organizations.

Another distinguishing feature of this sector is that it has a rather polarized structure^[3]. For example, in Finland the majority of over 6000 technical engineering firms employs less than five persons and only about thirty firms employ more than 100 persons. Most of the sector's turnover is also generated by a few larger firms, which operate in international markets. In terms of the number of firms and turnover, machine and process engineering is the largest sub-sector, but Finnish engineering firms provide also various other types of design and project management services to their clientele^[13].

Table 1. The world's top 10 consulting engineering and architectural groups^[2].

Group	Country	Employees	Turnover MUSD
URS Corporation	USA	29200	3918
AECOM	USA	24000	2400
Altran Technologies	France	16290	1785
CH2M Hill Companies, Inc.	USA	14500	3152
WS Atkins, plc	England	14300	2517
SNC-Lavalin Group	Canada	11940	3132
Parsons Corporation	USA	10312	3000
Parsons Brinckerhoff	USA	9600	1448
Arcadis Group	Netherlands	9208	1241
Mott MacDonald Group	England	8141	918

The growth of engineering and consulting sector has in recent years been especially due to the increased outsourcing of knowledge intensive and other services^[18]. That is, as firms in the industry focus on their core business activities and outsource the other ones, the demand for knowledge intensive business services

is increasing. This, however, means that the growth of engineering and consulting firms typically depends on the growth of the industry they operate in and that these services are also dynamic in terms of export value numbers. Moreover, technical engineering services are acquired more and more with turn-key contracts including all kinds of services in the same package, which favours large engineering companies. Smaller firms need to network if they are keen to compete with larger consultancies. Yet, at the same time services have become more versatile: in addition to technical engineering services, especially ICT services and new management consulting services have multiplied their export in a matter of years. The growth of the industry has shown its effects in Finland. The total turnover for the top 30 groups in Finland increased during 2005/2006 with 17,2 % to some 1102 MEUR and the number of employees increased with 15,3 % to some 13600. Also, at the end of our examination period, in the end of year 2006, the order stock of Finnish consultancies were on record level^[16]. This, in turn, poses the challenge of coping with the lack of skilled resources in certain sub-sectors. Increasing number of specialists and talented engineers are needed in the growing market.

3.2 Deal analysis

In the following, we will examine the cross-border deals of Finnish engineering consulting firms from the period 1997-2006. More specifically, our analysis includes Finnish companies classified under the SIC Industry code 8711 (Engineering Services) and selected firms classified under the code 8742 (Management Consulting Services) and 8748 (Business Consulting Services, Not Elsewhere Classified). ³Data were gathered from the Thomson ONE Banker database. Additional information was collected from companies' annual reports as well as from various news services.

3.2.1 Finnish acquirer firms and their foreign targets

In the examination period, 31 cross-border acquisition transactions in total were made by Finnish engineering consultancies (see Tab. 2). ⁴Sixteen of these were purchases of a minority or majority interest (less than 100% of shares), and in the case of 16 target firms the entire share capital was (eventually) acquired. In addition, 16 announcements of an acquisition were made (many of them related to the completed purchases of a minority or majority interest).

Table 2. Cross-border m&a by target nation (1997-2006).

Target nation	Completed deals	Not completed	Value, mil. \$US
Sweden	9	8	31
Switzerland	4		32.3
Germany	2	1	7.6
Italy	2	1	-
Lithuania	2		3,1
Poland	2		-
UK	2		-
USA	2		-
Norway	1	2	-
Denmark	1	1	17.4
Canada	1		-
France	1		-
Netherlands	1		-
Taiwan	1		-
Austria	-	2	-
Czech Republic	-	1	-
Industry total	31	16	

³ The selected companies were Etteplan Oyj and Pöyry Oyj (code 8748) and PI-Consulting Oyj (code 8742).

⁴ The included transactions are completed deals. The search criterion for transaction dates was Thomson's rank date. Usually this is the same as the announcement date of the deal. Here a not completed deal means that its status is currently pending/unknown.

In terms of the number of deals, the most significant target nation is Sweden (nine completed and eight announced deals), followed by Switzerland (four deals). Since the transaction statistics included the deal value only in a few cases, it is not reasonable to sort target nations in terms of the value of deals. However, the highest reported individual transaction values come from acquisitions from Denmark, Switzerland, Sweden and Germany.

When considering the target nations, it is not surprising that engineering firms have acquired other companies from e.g. Sweden, Germany, the United Kingdom and the USA, since these are among the most frequent overall M&A target nations (as well as important foreign trading partners) for Finland. Other Nordic countries and countries in Eastern and Central Europe being among the target nations is also quite expected, since they have been targets for expansion outside domestic markets for Swedish engineering consultancies, as well^[16]. On the other hand, only two acquisitions were targeted toward the Baltic countries (Lithuania) and no acquisitions were made from Russia. These growing economies are becoming more frequent targets for expansion for Nordic engineering consultancies in general, so one may expect that their role will be increasing in the future. Finally, one may note that only one acquisition was made from Asia (Taiwan), even though the economies of East and Southeast Asia have become more and more important target markets for engineering consultancies. It thus seems that the common strategy has been to establish a foreign office in these countries instead of acquiring a local company. New joint ventures are also one example of operating in the growing eastern market. For example, In China Pöyry Oyj's Forest Industry has formed a joint venture with Shandong Light Industry Design Institute.

The four acquisitions from Switzerland (in effect two companies) were made by Pöyry Oyj (Previously known as Jaakko Pöyry Oy) - one of the largest engineering consultancies in the world.⁵ The Pöyry Group consists of three business groups - forest industry, energy, and infrastructure and environment - and acquisitions have been an important vehicle for its growth in recent years. Indeed, whereas in the 1980s the company participated actively in the forest industry's internationalisation and mainly expanded its activities by establishing subsidiaries e.g. in the United States, Southeast Asia and Australia, during the past ten years it has expanded especially through acquisitions. This is mainly because of the company's strategic decision in 1993 to expand the Group's activities into two new business sectors (energy, and infrastructure and environment). Therefore, it is not surprising that out of the listed 31 deals, 15 were made by Pöyry, or its subsidiary Electrowatt Ekono (Pöyry also made 6 deal announcements, which are not yet completed). In addition to the four acquisitions from Switzerland, Pöyry's acquisition target nations in Tab. 2 include the USA, France, Poland (2 deals), Taiwan, Canada, the UK (2 deals), the Netherlands, Germany and Italy.

Another active acquirer company has been Etteplan (or Konette, one of its subsidiaries) with seven transactions. Five of these transactions were targeted toward Sweden, which is in line with Etteplan's strategy to become one of the leading engineering design companies in the Nordic countries. The company is also trying to obtain a strong market position in Central Europe and has therefore set the goal to do acquisitions primarily in the Nordic countries and continental Europe^[4]. On the other hand, Etteplan has also taken its first steps toward Asia: in 2004 Etteplan and its joint venture partner (Nextrom) established an engineering design office in China. Besides Finland, Sweden and China, Etteplan currently has offices also in Germany and Italy.

3.2.2 Finnish target firms and their foreign acquirers

Over the past ten years, there have been far fewer sales than purchases of Finnish engineering consulting companies: the total number of completed transactions was ten, and only in three cases was the entire share capital acquired by the foreign company (see Tab. 3). Nevertheless, these acquisitions were quite significant and clearly manifest the global consolidation trend in the industry. In particular, the two acquisitions by the Swedish engineering consultancy ÅF Group (targets CTS Engineering and Enprima) and one acquisition by the American Jacobs Engineering (34% of Neste Engineering) are good examples of the strategic growth of major international companies. Furthermore, by purchasing Enprima with operations also in the Baltic States, Russia and Southeast Asia, ÅF Group is pursuing an expansion towards the east.

⁵ In 2005, Pöyry was one of the world's top 20 consulting engineering and architectural groups^[15]. The company has more than 6 000 employees in 45 countries.

Table 3. Cross-border m&a by acquirer nation (1997-2006).

Acquirer nation	Completed deals	Not completed	Value, mil. \$US
Sweden	5	3	91,6
USA	2		-
France	1	1	11
Germany	1		36,1
Netherlands	1		-
UK	-	1	-
Industry total	10	5	

3.2.3 Motives and types of acquisitions

If the statistics of Finnish sample are compared e.g. to those of Sweden^[16], it seems that foreign interest in Finnish consulting firms is weaker than foreign interest in Swedish firms. Still, the trend is somewhat similar: larger international engineering consultancies have consistently acquired smaller domestic engineering consultancies in their selected competence areas. For example, the Finnish firms Pöyry and Etteplan have expanded quite strongly in Sweden in recent years, whereas the Swedish ÅF Group and SWECO have targeted their acquisitions toward Finnish companies.

One of the recent trends in the engineering consulting sector has also been a shift of emphasis from e.g. building design to operations within energy, the environment, infrastructure and project management. This can be seen clearly from the fact that many larger engineering firms have expanded their business by acquiring other companies specialized in energy consulting, infrastructure and environmental engineering. These types of acquisitions can be considered as product extensions. The trend is also in accordance with the finding that diversification into new service (or client) markets is the most important motive for engineering consulting firms to undertake an M&A transaction^[9].

Moreover, a large part of cross-border acquisitions obviously consists of deals between companies that produce the same services, but sell them in different geographic markets. So, market extensions are a common type of acquisition, as well.

It is also typical for engineering industry that traditional working routines are used and changes are relatively slow when compared to some other industries. Regarding the existence of innovativeness in the industry, the lack of resources and conventional approaches to work seem to be typical barriers to exploration and radical innovations^[2]. The working environment for engineering consultancies is often strongly project-based and client-led, and often, clients do not expect radical innovations to happen during the projects. However, in many industries, clients can be seen as lead users who also assess the ability of a consultancy to provide innovative solutions, in addition to implementing their projects cost-effectively and on schedule. This requirement may increase the need to acquire smaller innovative firms with specialized expertise and the total number of vertical integrations and even conglomerates.

4 Conclusions

Markets in the technical engineering sector have become global, and the internationalization and outsourcing in the field have had a great influence on industry consolidation and on the need of selling and purchasing specialized expertise in different geographical areas. This is clearly seen in firms that come from small economies such as Finland. The aim in this study was to shed light on this recent phenomenon of industry consolidation by mergers and acquisitions in the technical engineering and consulting field and to increase understanding on the types and motives and other influential factors of M&A in this particular sector.

There are some previous studies discussing the motives and types of M&A in these types of firms. Diversification strategies and horizontal transactions have been emphasized in the study of Kreitl and Oberndorfer^[9]. Due to structural changes in the industry and increased competition and an increase in M&A in the field, our study focuses on the recent (1997-2006) M&A in the sector, especially from the point of view of Finnish actors in the field, which has not been the focus in previous studies. In the examination period, a

total of 31 cross-border acquisition transactions were made by Finnish engineering consultancies, but there have been far fewer sales (10) than purchases of Finnish engineering consulting companies.

In addition to the Thomson ONE Banker Database of cross-border deals, we utilized company information such as annual reports as secondary data in order to further study the motives behind some particular transactions. Generally, the motives for M&A in Finnish organizations reflect the changes in clientele with regard to the demand for more comprehensive turn-key contracts. This is why product/service extensions to the new fields are the main types of mergers and acquisitions. Market extension to new geographical market is clearly another typical motive. However, the global trend in the industry to move eastwards is not yet clearly seen in the statistics of cross-border acquisitions of Finnish firms. Instead, Finnish firms seem to prefer other types of organizational arrangements, e.g. establishing their own local offices abroad, first.

In the business of selling knowledge and competences, it is obvious that through acquisition, companies aim to acquire new competent people and human capital. However, diversifying for new markets with new products by especially seeking talented people for promoting open innovation in the firm is not apparent in the motives within this sample. Instead, collaborative innovation activities may be the next step after product and market extensions, and they might also happen in the form of joint ventures or other organizational innovations.

This study has its limitations due to the limited sample and focus on one geographical area (Finnish firms). In the future, in-depth case studies might provide new insights regarding the motives and decision-making criteria of acquisitions as well as their impact on real strategic growth and innovations in the field. On the other hand, similar data from other small economies could be gathered, as this would provide a basis for comparisons in the types and motives of mergers and acquisitions in the technical engineering firms of different geographical areas.

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