



Digitalisation and Restructuring:  
which Social dialogue?

WP3: Country case studies



Draft report

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## Introduction

One of the most important current debates in the context of the ongoing digitisation of the world of work is how technological developments will affect the labour market. With their gloomy prediction that almost every second job in the US labour market will be threatened and substitutable by automation (see Frey&Osborne 2013), the two authors Benedikt Frey and Michael Osborne elicited a great response in the academic world. However a study from the Institute for Labour Market and Occupational Research (IAB) that examined the substitutability potential of occupations in Germany initiated by digitisation comes to the conclusion that the fears of the US study for the German labour market are rather unfounded (Dengler/Mathes 2015: 22). Accordingly, only about 15% of activities would be in danger of being replaced by automation (ibid.).

The following case study on Hamburger Hafen und Logistik AG also focuses on the effects of technological developments and restructuring measures on employment. Hamburger Hafen und Logistik AG (HHLA) is suitable as a company for this case study for several reasons. First of all, the Port in Hamburg belong to the logistical industry. It is the largest seaport in Germany and HHLA, as the largest port logistics company in the city, is extremely important as a logistics hub in world trade. In addition, technical innovations and automated workflows guarantee high productivity and make HHLA a leading European logistics company. In addition, the company is characterised by a special automation culture, which in turn is strengthened by strong co-determination, as the following case study will show. The social partnership between people, organisation and technology ensures that HHLA's Altenwerder container terminal (CTA) is one of the most efficient terminals in the world and a prime example of successful automation and digitisation processes.

The present case study first gives an overview of the HHLA Company, whereby the focus is on the HHLA CTA (container terminal Altenwerder) as a subsidiary, as it fits very well with the Diresoc research interest as the subject of the study. First, the technological components that make up the high degree of automation of the CTA will be explained. The following section outlines some digital innovations that could be implemented at the Company in the future. The next chapter describes the effects that restructuring processes have already had or could have in the future on employees' working relationships and as well the associated risks. In the following chapter, the social dialogue will be analyzed in particular in the context of the restructuring processes in the company. It is of crucial interest for this case-study which instruments are the outcomes of the social dialogue - in this case a collective agreement, a letter of intent and a company agreement, were used to regulate the current and future processes on the basis of social partnership and to negotiate them in the interests of both sides.

## 1 Methodology

In preparation for this case study, first of all information on the company were gathered on the basis of the company's website and on relevant documents, such as the Company's annual report. The first access was given through a trade union representative, who has been in contact with HHLA's Executive Board. In a following telephone interview with the human resources director from the executive board, an

overview of the company's structure and the relevant topics of the social dialogue were obtained. Two further interviews were arranged subsequently with the Company's human resources director and the CTA's human resources manager in the corporate headquarter. This was followed by a telephone interview with the chairman of the works council of the CTA. The two personal interviews and the telephone interview with the chairman of the works council were semi structured. The interviews were accompanied by a document analysis. In addition to the annual report, the relevant documents including the collective bargaining agreement on innovation and rationalization protection, the declaration of intent by the executive board and a company agreement concluded on the basis of the collective bargaining agreement were analyzed.

Table 1. Overview of interviews

Personel director executive board HHLA	spontaneous interview (telephone)
HR director HHLA	semi-structured interview
HR manager CTA	semi-structured interview
Works council chairman CTA	semi-structured interview (telephone)

## 2 General information of the company

When the "Hamburger Freihafen-Lagerhaus-Gesellschaft" was founded in 1885, HHLA's predecessor organisation pursued the goal of establishing the Speicherstadt as the largest and most technically advanced logistics centre at the time. About 50 years later, the company became "Hamburger Hafen und Lagerhaus-Aktiengesellschaft" (HHLA). After the Second World War and in the course of the reconstruction of the Port of Hamburg, HHLA gradually developed into one of the most modern ports in Europe. One highlight of these developments was the opening of the HHLA Container Terminal Altenwerder (CTA) in 2002, which is still the most automated port-facility in the world today. In 2005, the company changed its name to "Hamburger Hafen und Logistik Aktiengesellschaft".

### 2.1 HHLA

Hamburger Hafen und Logistik AG consists of the two subgroups Port Logistics and Real Estate, the latter accounting for only approx. 3% of the total turnover of € 1,291.1 billion. The Port Logistics subgroup operates in the container, intermodal and logistics segments. With the HHLA container terminals in Hamburg, the Container segment with the highest turnover is the most important European hub between Asia and Central and Eastern Europe. Together with the smaller container terminals in Odessa and Tallinn, the Container business segment accounts for 59% of the Group's total turnover. The second most important business segment, Intermodal, with a 34% share of total turnover, is container transport to the seaport back country of HHLA's rail companies and trucks. Logistics services, which include special handling (bulk goods, general cargo, motor vehicles, etc.) and airborne logistics services as well as consulting and training, round off HHLA's range of services with a 4% share of sales. The customer base in the Container and Intermodal segments consists mainly of shipping companies and forwarding agents. In the 2018 financial year, HHLA's customer base included all the top 10 container shipping companies. The services in the Logistics segment are directed at a large number of customer groups, from Steel companies and power plants (in the area of bulk cargo handling) to international operators of ports and other logistics

centres (in the area of port consulting) (HHLA 2018: II)

Two thirds of the shares in the Port Logistics subgroup are held by the City of Hamburg and one third by the free float. According to the Articles of Association of a German stock corporation, the management of the Group is divided into two parts: a Executive Board and a Supervisory Board. The Executive Board manages the company on its own responsibility. The Supervisory Board appoints and advises the members of the Management Board and monitors the work of the Management Board. HHLA's Executive Board consisted of four members in the 2018 financial year, whose areas of responsibility are broken down according to tasks and segments. (ibid. 10f.)

#### Business-strategy

In 2017, HHLA's Executive Board agreed on a business development process that aims to remain prepared for the future in a dynamic market environment and to strengthen the company's ability to shape future. This contains

- Anticipating and usage of the future environmental conditions
- Guarantee flexibility, through quick action and adaptability
- Integration and usage of new possibilities

As part of this corporate strategy, the following four initiatives were identified by the executive board

- Prepared for the world of tomorrow: The core business has to be strengthened and competitiveness, quality and profitability should be increased
- Opening up new growth areas: To tap the growth potential of future transport flows and digital business models
- Organisation and culture: To focus on future developments, with a stronger focus on the customer.
- Investments and Finances: Sustainable and profitable growth should be maintained

(HHLA 2018: 19f.).

The planned corporate strategy measures underscore openness to innovation and the willingness to react flexibly to a changing environment. This can also be seen in the promotion programme for Innovative Port Technology (IHATEC), which contains the "Container Terminal 4.0" project with the goal to explore the possibilities for further technological developments at Container Terminal Altenwerder (CTA). With regard to the implementation of future automation processes, the possibilities of interaction between man and machine will be investigated (ibid. 22).

#### Employment

The whole company currently employs approximately 5,900 people. Compared to the previous year, the number of employees has increased by approx. 350 (6.4%), but this development is also due to the successful acquisition of the largest Estonian terminal operator. Slightly more than half of HHLA's employees (3,130) work in the container sector. This is followed by the Inter-modal division with 2,000 employees and the other divisions with approx. 800. 3,500 employees (59%) work in Germany (mainly in Hamburg). It should also be added that the majority of the German workforce (approx. 84%) consists of men, which is due to the fact that men are traditionally more likely to work in this labour market segment. However, in recent years there has been a growing proportion of women in Germany, which stood at 15.7% in 2018.

### Industrial relations

HHLA concludes its collective agreements with the trade union ver.di. There is also a very high degree of trade union organisation within the company, which is > 90% in individual companies such as the CTA.

## 2.2 HHLA CTA

Container Terminal Altenwerder (CTA) is a subsidiary of HHLA and has been the youngest terminal in operation since 2002. The CTA was created as a greenfield project and has been largely automated since its opening. By European standards, the high-tech facility is ahead in key performance indicators such as container movements and ship lying hours and is regarded worldwide as "state of the art". Thanks to its high degree of automation and compact layout, the CTA is groundbreaking for the container handling of the future.

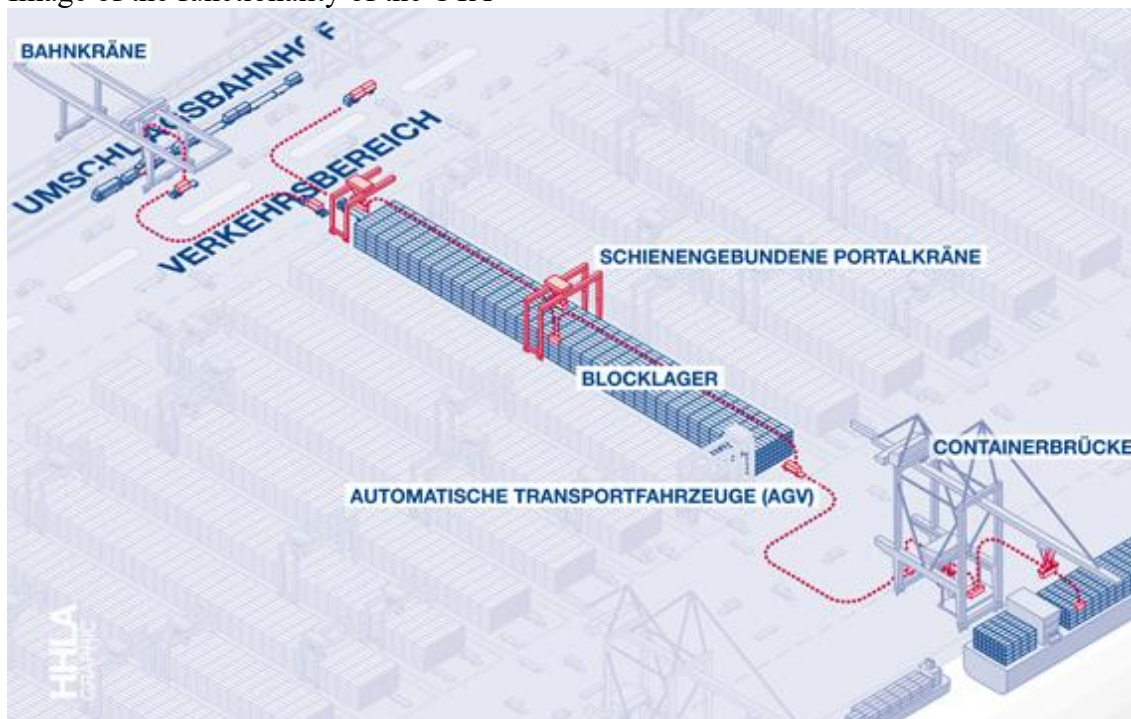
The CTA layout consists of three elements: The container gantry cranes with two-crab system, self-propelled AGVs (Automatic Guided Vehicles) and a block storage system with rail-guided gantry cranes (RMG), which were used in combination for the first time.

Since its commissioning, the terminal has grown continuously in terms of volume, which is why the number of staff has been constantly increased. Currently there are about 850 employees working at the CTA. Of these, approx. 350 work outside in the operative area and approx. 500 in the control and administrative area.

### Functionality

On the water side, special container gantry cranes equipped with two trolleys unload and load the steel crates from and onto the ship. The crane operator places the containers on a higher work portal, where lashers remove or attach twistlocks (used to secure containers on board). The container is then automatically picked up by a gantry trolley and placed on an Automated Guided Vehicle (AGV). These automated vehicles ensure transport between the gantry cranes and the container warehouse. A specially developed software system uses more than 19,000 transponders embedded in the AGV area to find the fastest route. Their signals are used to determine the position of the vehicles. If necessary, they can also refuel themselves or drive to the charging station to change the batteries. The container warehouse consists of 26 storage blocks, each processed by two rail-mounted gantry cranes (RMG). The boxes are stored according to the software specifications and the storage locations are optimised in quiet phases so that delivery takes place as quickly as possible. The containers are distributed on land by employees in the control centre who place them on trucks or chassis using joysticks and cameras. The transport between block storage and rail transshipment is carried out by tractors with their own terminal chassis. An extremely complex control system, the terminal logistics and control TLS, combines transshipment with storage and rail and road traffic on the entire terminal.

Image of the functionality of the CTA



(source: hhla.de/)

### 3 Process of restructuring linked to digitization

This chapter focuses on the pending or already implemented restructuring processes in HHLA CTA, as this operation is of great importance due to the high degree of automation already described and the social partnership agreements reached. Afterwards, some considerations on the possible implementation of technological innovations, which currently prevail at HHLA, will be described in order to give the reader an overview and a better understanding of the technological drivers and the complex environmental conditions of the company.

#### 3.1 Restructuring processes at the CTA

In consideration of the fact that the CTA was planned on the drawing board as a greenfield project and has been largely automated since its opening, big restructuring processes have so far failed to materialize. However, due to the terminal's high degree of automation, new technological developments are a constant topic. This is also shown by the social partnership agreements which explicitly deal with this topic and are described in detail in a later chapter of this case study.

As already described in the previous chapter, the horizontal traffic between the block storage area and the container gantry cranes is already fully automated. AGVs (automated guided vehicles) operate in this area and use transponder patterns to find

their own routes and avoid obstacles. In addition, they are now electrically powered and charge their batteries autonomously. It should be noted here that the company's aim is to operate in a climate-neutral manner, i.e. to cause zero-emissions. Technologically, some changes have taken place with regard to automated vehicles, as they were initially driven by diesel and are now fully electric. However, these measures had no impact on employment. In addition, the cranes in the block warehouse are operated automatically. Only in the area of truck delivery are the trucks approaching the block manually loaded with remote control via camera. As soon as the truck is out of the danger zone, the automatic system takes over again.

A recent restructuring measure at the CTA also had an impact on the work organization of the employee. In 2017, a digital train recording system was implemented in the area of railway operations. Trucks entering the CTA are already detected with a camera recognition system. Now the images are also captured using an OCR gate, which records the most important data of the carrying wagons/containers. With this method, the arriving trains can be digitally mapped and manual recording by the employees (railway checker) is no longer necessary. Since the introduction of this process has automated activities that were previously carried out manually by the employees, the measure was intensively discussed between the operating parties and a joint design of the process was agreed. In 2014, a collective agreement was concluded between the management of the trade union and the company parties, which will be dealt with explicitly in a subsequent chapter. On the basis of the collective agreement, a company agreement was concluded which regulates the restructuring process on a social partnership basis. The aim of these agreements is to shape the upcoming technological developments jointly and above all in the interests of the employees.

There are also considerations to automate the railway crane area in the CTA, i.e. to operate it remotely. For the employee, this would mean that he would no longer sit in the crane himself and work manually, but would operate it via remote control. So far, there have only been theoretical simulation games, so that the exact effects, for example in the form of work substitution, cannot yet be predicted. In principle, the applicability of new technologies is continuously monitored throughout the entire company, not least because of the intense competition with other market participants. No concrete restructuring measures are currently planned in the HHLA Group, although there are some cooperations and projects which are outlined below and which could have a significant impact on employees if implemented.

### 3.2 Considerations for future restructuring processes in the Company

There are currently no direct plans in the Company for the implementation of new restructuring processes. Nevertheless, there are some projects and cooperations that deal with innovative concepts that could also have an impact on employment in the near future. The possible technological drivers will be briefly outlined below in order to give an outlook on the possible dimensions of technological developments.

- **Hyperloop**  
There is already a joint venture with the US group. The aim of the cooperation is to determine the extent to which container transport in high-speed tubes is possible. If the concept is feasible, the containers could be transported at speeds



of >600 km/h from the port to the back country.

- Drones  
For this purpose, the company sky was founded internally, which deals with the usability of drones. For example, the drones can take 360-degree pictures of the terrain with the help of which so-called digital twins can be created, which make it possible to plan construction phases in real time.
- 3D printing  
There is a share in the company Bionic, which deals with the opportunities of the use of 3D printing.
- AI  
The extent to which artificial intelligence can be used in the field of administration to automate processes such as the writing of invoices will be examined.

So far, the possible effects of automatization on employment are still unclear. Some of the processes could also create jobs. So far, no concrete measures have been planned.

## 4 Social Impacts

### Digital train detection

A very vivid example of work substitution through technological development is the previously described restructuring measure in the railway area of CTA with the usage of digital train recording. In the course of the implementation of this new technology the threat of job-destruction of the workers (Train-checkers) working in the railway sector threatened. Due to the concluded company agreement (described in chapter 5) of the operating parties, there were no job losses and measures were taken in the interest of the employees. In addition, there was a relocation of workplaces, as the previously manual work of the railway checkers was also transferred internally to the screen by the digitisation process, from where the digitally recorded containers are processed. The change in activity also raises health issues for the employees concerned. For example, it is often important for people to have a physical compensation when they now have an office workstation and had otherwise walked several kilometres before.

### Multiple qualification

A corporate concept for meeting the challenges associated with digitisation processes is multiple qualifications, which are carried out throughout the entire company. At HHLA CTA in particular, this concept was proactively promoted by the works council due to the high degree of automation affinity of the terminal. The concept is also welcomed from the management's point of view. Multiple qualifications from two to seven activities are possible at the CTA. However, the perspective of the employees is different with regard to this measure. The majority of employees welcome the offer of multiple qualification, but there are also employees who are less positive about this measure, as they see the offer of further qualification more as an imposition than an opportunity for further development. This, in turn, calls for comprehensive educational work on the part of the company actors in order to explain to the employees their direct personal advantages of the concept.

On the one hand, the multiple qualification concept is intended to create a health benefit for the employees. Unilaterally stressful activities are reduced and supplemented by others. Furthermore, there is the possibility of introducing more variety into the work process. As already described above, some of the employees assess the routine of the work tasks as positive, however, the experience of the actors involved was that after completion of the qualification for a further function, the positive experiences predominate. Routine is important, but should not lead to boredom. On the other hand multiple qualification also protects employees from possible job loss, which can occur by substituting work for automation. The example of digital train recording described above is symbolic of the possible occurrence of such a restructuring process. Ultimately, the measure also has advantages for the company. In addition to the positive health factors that benefit the employees, these can also be used more flexibly in the various functions and compensate for short-term vacancies better.

As soon as an employee expresses interest in a new position, a trial day is first agreed, in which he is instructed in the new work activity and his suitability is checked. The entire further training measure is covered in time.

#### Working time and health & safety

Another important process at the CTA is the recent transformation of the shift system. The aim was to make the old shift plan more plannable for the employees and thus to reduce the stresses from the old shift system. In addition, there is a separate remuneration for night work, which can also be credited as time. In addition, up to 480 hours of overtime can be accumulated in a long-term account. In addition, there is also a lifetime working time account or a capital account which enables employees to retire earlier and make early retirement provisions. The idea behind the versatile working time models is that employees' lifecycles can change during their working life and be provided for through working time accounts. The offers were very well taken by the employees.

## 5 Role of social Dialogue

Social dialogue plays a special role in HHLA CTA. Of particular interest for the Diresoc research project is the interplay between the three "tools": Letter of Intent, Collective Agreement and Company Agreement, which are presented in this chapter.

### **Letter of Intent 2016**

Due to the outstanding position of the CTA within the HHLA Group and the associated challenges with regard to digitalization, a letter of intent was concluded between the management of HHLA and the management of the CTA and the works council of the CTA. In this letter, HHLA and the operating parties reaffirmed their common goal of protecting the workforce from the negative effects of implementing new technologies and taking appropriate measures in the organization of work. The regulation of working hours is a particularly relevant factor here. This is what the declaration literally says:

"HHLA and the operating parties are pursuing the goal of reducing negative effects on employees through further automation or, ideally, avoiding them as far as possible. The existing manual activities are distributed in the best possible way to safeguard jobs. The signatories agree that the means of reducing working hours will be used to secure jobs."

Of particular interest here is the aspect of shortening working hours to secure jobs. As the company agreement described in the following section will show, this instrument has already been used and has benefited the employees concerned in the form of a "digitisation dividend" in the form of additional paid breaks.

In addition, the works council is involved in the planning of possible upcoming restructuring processes from the outset.

"The company management will inform the works council immediately if concrete plans for further process optimisation or automation are to be included. At the same time, talks will be held on the issues described here."

This letter of intent shows the strong cooperation between the social partners and sends a strong signal to the employees of the terminal with the intended to ensure (workplace) security in a broad sense in times of great change.

### **Collective agreement "Protection of innovation and rationalisation" 2014**

At the beginning of 2014, a collective agreement was concluded between HHLA CTA and the ver.di trade union, which provides a framework for the regulation of future restructuring processes based on social partnership in view of technological developments. The aim of the agreement is to avoid any (psychological) burdens on employees that may arise as a result of innovation and rationalisation measures human-centred and thus to avoid negative effects of technology to the detriment of employees. At the same time, the positive company culture towards further technological developments cultivated by the employees of the CTA is emphasized. This is stated in the preamble:

"At CTA, there is a positive culture for change, openness to technological developments and a high willingness on the part of employees to get involved in these issues. (...) The aim of this collective agreement is to create a set of rules that will enable such projects to continue to be implemented, but to prevent any rationalisation or possible work intensification resulting from such projects from being unilaterally or inappropriately to the detriment of the employees".

First of all, the collective agreement provides for early involvement of the works council as soon as projects within its area of application are due. If necessary, a joint working group will be set up between the company parties. In order to assess the expected impact of a planned measure, three materiality criteria are assessed as the basis for assessment. The criteria include:

- The number of persons employed in the department concerned (X)
- The expected Degree of change in workflow (Y)
- Improving the internal productivity of the department affected by the measure (Z)

According to the formula:

$$X*Y*Z= \text{Factor}$$

The factor of innovation or rationalization-protection of the measure is determined. Depending on the number of affected employees, the degree of change in the workflow and the degree of improvement in internal productivity, the individual factors are measured with values between 1-10. Based on the calculated value (product) of the

factor, measures to be discussed and defined between the parties are derived.

At a value of >100 - 250:

- Early consultation with the works council
- Investigation / recording and documentation of the expected transformation
- Information of employees about the results of the investigation
- Training of the employees concerned

If the value is > 250, the following additional measures are added:

- Training of the affected employees in the form of project-related qualification measures
- Measures to maintain or promote health
- job security measures
- Offer of an alternative workplace

The collective agreement has been valid in the CTA since 2014. On the basis of its framework for determining the innovation/ rationalization-protection-factor, a company agreement has already been concluded which concerns employees in the railway area.

### **Company agreement on the CTA railway workers**

As already described in the previous chapter, a restructuring measure took place in 2017, which included the automated acquisition (checking) of the containers of the trains arriving in the CTA. Previously, the containers were recorded manually by the staff employed at the railway facility. This process is now digitally recorded using 16 cameras. These cameras can record the container data and display entire trains digitally on the screen. Since the digitalised process of train recording ultimately substituted manual work, the evaluation measure described in the collective agreement was applied. Due to the new working methods and the linked rationalisation effects, which had a direct effect on the working method of the employees, the factor 210 was determined according to the  $X*Y*Z$  formula. After implementing the measures described in the previous section, an additional 15-minute paid break for the concerned employees (train checker/screen checker) was agreed in a company agreement. The agreement thus follows the declaration in the letter of intent to involve the employees in the automation/ rationalisation measures taken.

## **6 Conclusions**

As already explained in the previous section, the interaction of collective agreement, letter of intent and works agreement sends an important signal to the HHLA CTA staff. The agreements concluded illustrate the mutual will to jointly shape technological restructuring processes. At the same time, they stand for a sustainable result of the cooperation between the operating parties. It is clear to both sides that automation is taking place, and future innovative projects will also be welcomed by the workforce due to the existing automation culture at CTA. With the conclusion of the collective agreement between management, trade union and works council, all parties involved are involved in shaping future processes. In addition, the parties jointly set a framework for the implementation of necessary developments.

The management of HHLA and the CTA considers communication with representatives of the co-determination side to be extremely important:

"There's no talking about each other. There's talking with each other.  
The question is not whether you work together, but how."

The collective agreement sets the framework for cooperation. For the other projects in the future, the question of how to organise them together and involve the works council is important. For the co-determination side it is also clear that cooperation and the implementation of new projects would otherwise not work.

In addition, the results of the cooperation have an impact on the workforce and ensure that the planned processes are accepted by the employees. It is also important to keep an eye on mutual interests in the negotiation processes.

This is also shown by the summary evaluation of the social partnership cooperation of the works council at the CTA:

"Conflicts exist, if only because of the distribution of roles, but dialogue is there.  
We have a clear mandate, but again we do not demand anything that cannot be implemented".

The case study shows the manifold possibilities and instruments that arise and can be applied through the trusting cooperation of the company parties and that can benefit both the company and the employees. The social dialogue builds a solid foundation for reaching agreements, even in times of great change, which bring mutual benefits and represent a win-win situation for those involved.

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