Oracle Coherence

The Experience at El Corte Inglés
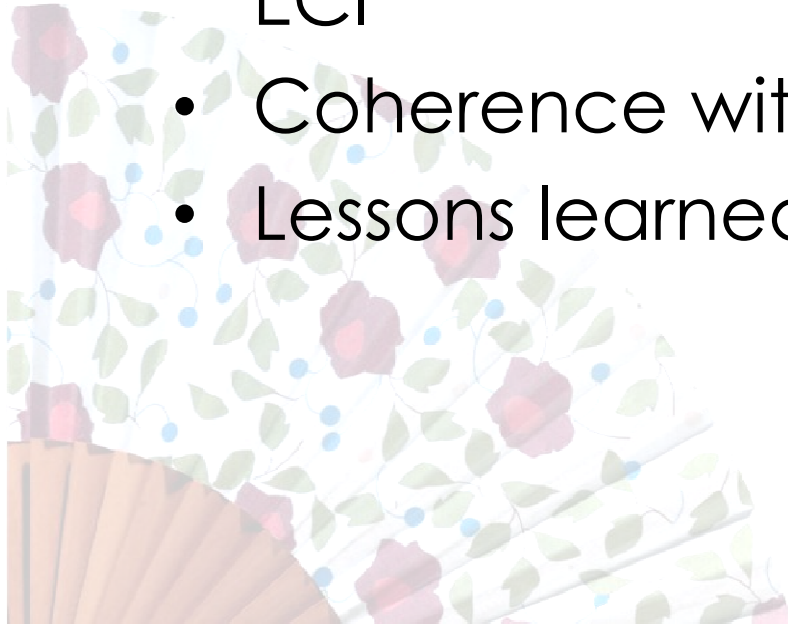
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El Corte Inglés

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- Coherence at El Corte Inglés
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El Corte Inglés

- El Corte Inglés is a world leader in large department stores with more than 70 years' experience

- In addition to the El Corte Inglés department stores, the Group has other companies, such as Hipercor, Opencor, Sfera and Viajes El Corte Inglés, among others

El Corte Inglés

Coherence in El Corte Inglés

- Pilot project in the travel agency

- Looking for a distributed cache solution for the e-commerce applications

- We already had Coherence licenses within the global agreement between Oracle and El Corte Inglés

Projects in Production

- Distribution Ways

- Inventory

- Site-To-Store

- Prices

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Distribution Ways

- This information is used from online shops to determine how the goods will be delivered to the customer and on this basis decide whether to split the order into several or a single delivery
- This cache stores data from a Logistics Information Web Service (SOAP)
- Data is loaded on demand (lazy loading)
- Cache Invalidation is implemented via the reception of messages (JMS) sent from the Host application that manages the original data

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Distribution Ways Logical Architecture
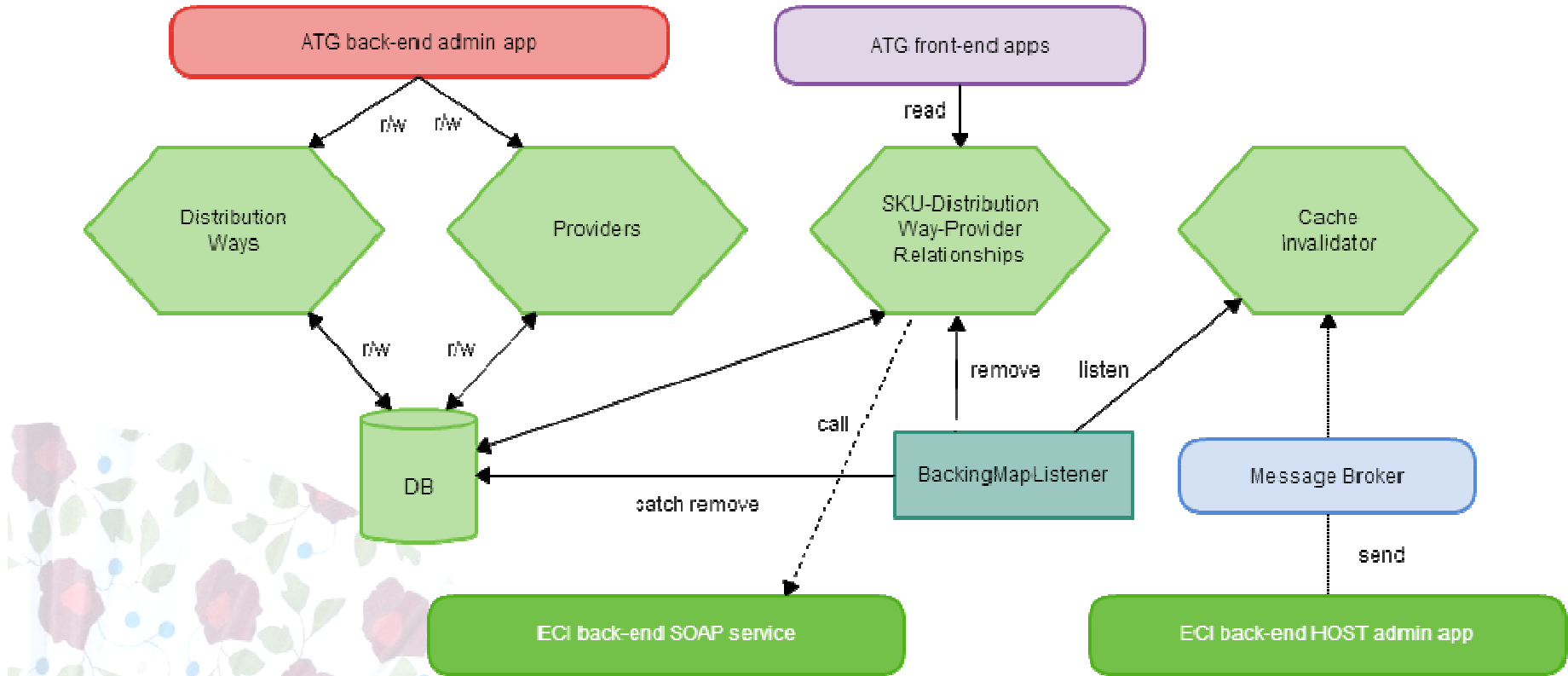
Distribution Ways Statistics

| Distribution Ways	Data (MB)	Indexes (MB)	Num. Objets
distribution-ways	0,002	0,000	5
sku-dist-way-provider-rel	703,812	0,000	1.500.000
providers	0,002	0,000	5
distribution-ways-cache-invalidator	0,001	0,000	5

- sku-dist-way-provider-rel: 1,7m/gets/h Avg: 98ms

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Inventory

- This information enables the e-commerce applications with the ability to provide the customer with a more accurate delivery time (24h, 48h), or give the customer the possibility to collect the order in a shopping center
- Three data sources (two warehouses and the inventory of each shopping centers)
- Warehouses' information is received online via the Message Broker (ESB)
- Shopping centre inventory is updated on a daily basis with the reception of a flat file from the Host that gets loaded in the DB. The cache is then flushed and reloaded through a distributed load process

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Inventory Logical Architecture
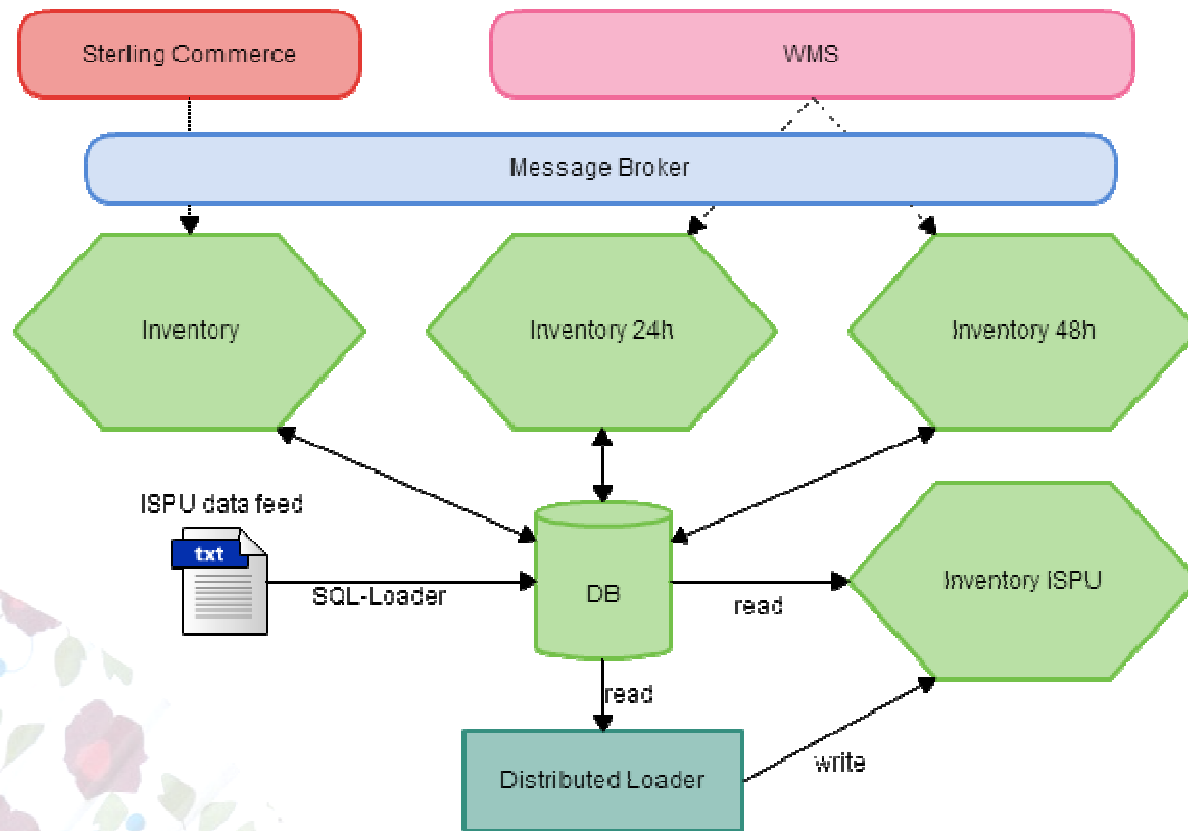
Inventory Statistics

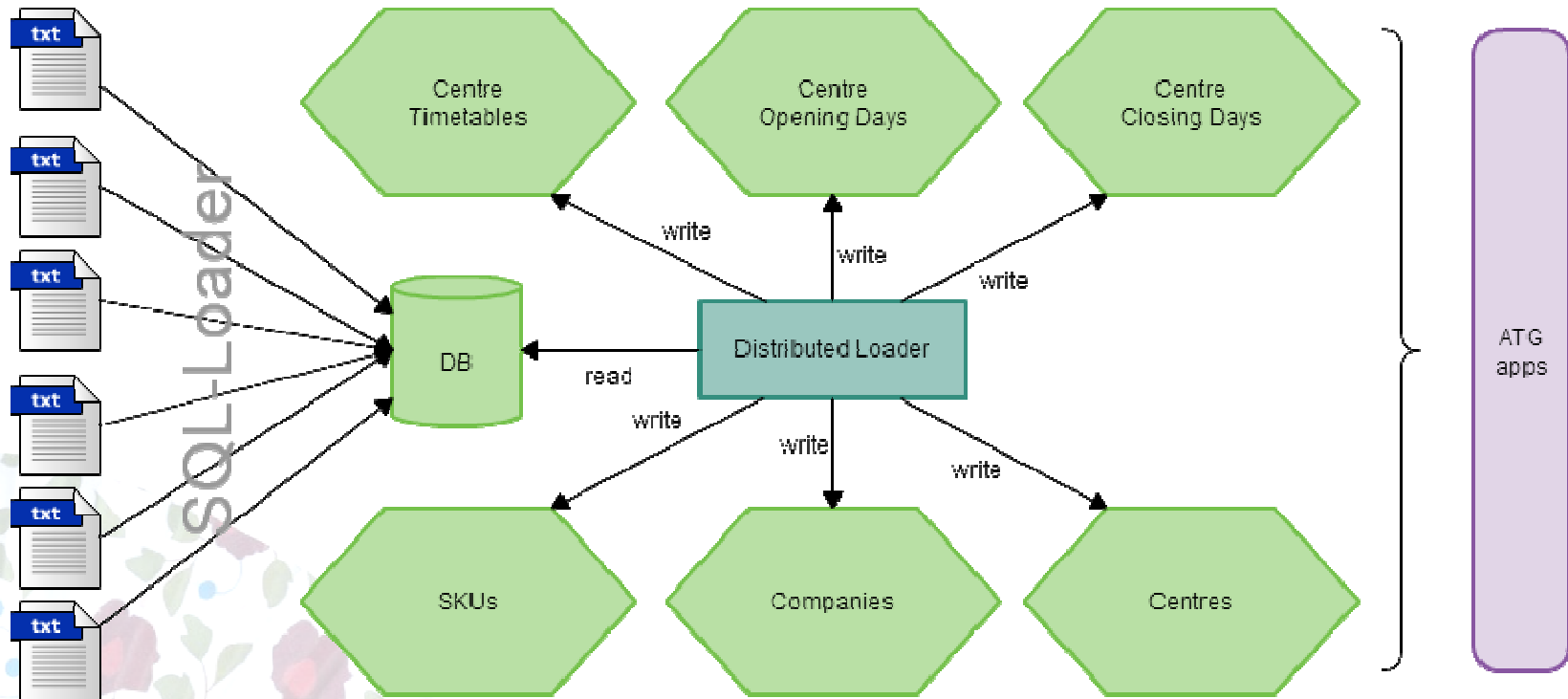| Inventory	Data (MB)	Indexes (MB)	Num. Objets
inventory-ispu	2.838,135	2.197,266	6.000.000
inventory-90	473,022	0,000	1.000.000
inventory-48h	244,141	0,000	500.000
inventory-48h-semaphore	0,000	0,000	1

- Inventory 24h: +100.000 gets/h
- Inventory 48h: +20.000 gets/h

ElCorteInglés

Site-To-Store

- Set of caches to store information about El Corte Inglés shopping centres

- It also contains logistics information about items that can be delivered from the warehouses to more convenient collection points

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Site-To-Store Logical Architecture

Site-To-Store Statistics

Site-To-Store	Data (MB)	Indexes (MB)	Num. Objets
STS-skus	1.823,425	732,422	4.000.000
STS-companies	0,002	0,000	5
STS-centres	0,112	0,000	200
STS-centres-timetable	0,684	0,000	1.500
STS-centres-opening-days	2,308	0,000	5.000
STS-centres-closing-days	2,232	2,232	5.000

- STS-skus: 60.000 gets/h

Prices

- Price information is used to efficiently calculate the best price for each item in the online product listings. It is also used to provide the base price on top of which offers and promotions are applied while calculating the order's total price

- System created to calculate and store the best price when buying just 1 unit of a given item (SKU)

- Each price is calculated from a reference base price together with global discounts, offers and promotions coming from other corporate sources

- Price changes information is also generated for the incremental indexing process of the e-commerce application search engine

- A scheduler (Quartz) has been implemented in order to control the process execution inside Coherence

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Price Calculation Logical Architecture
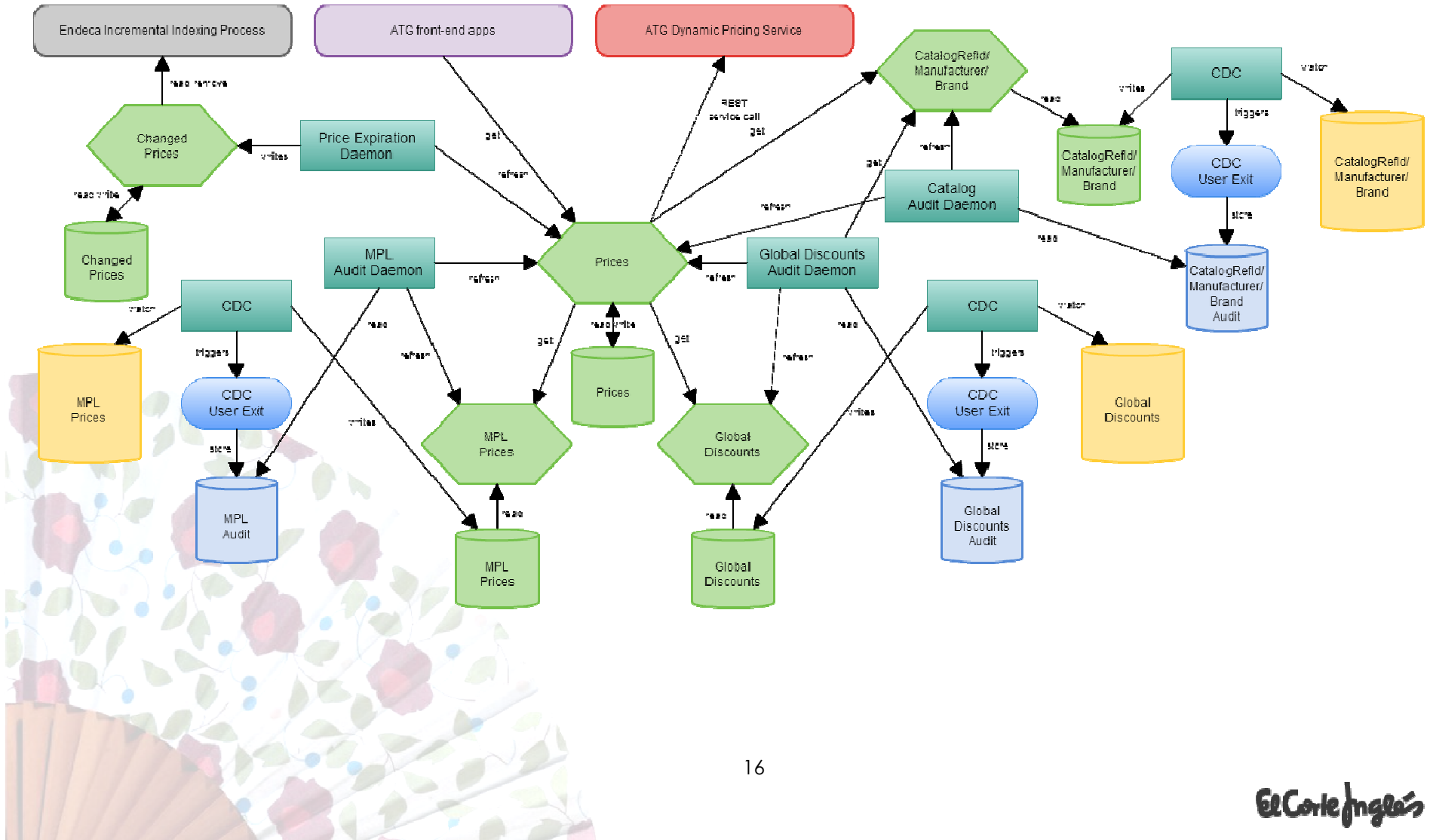
Prices Statistics

Prices	Data (MB)	Indexes (MB)	Num. Objets
prices	670,166	0,000	1.280.000
mpl-prices	620,117	0,000	1.280.000
global-discounts	464,630	492,668	700.000
catalog-ref-manufacturer-brand	3.110,886	0,000	7.000.000
changed-prices	56,076	0,000	200.000

- prices: +520.000 gets/h   Avg: 319ms
- global-discounts: +41.000 gets/h
- catalog-ref-manufacturer-brand: +690.000 gets/h

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Coherence with ATG and benefits to ECI

- Integration between Coherence and ATG is not OOTB

- Coherence implementation has allowed the ATG platform to achieve levels of performance, scalability and predictability that were impossible before

- It has allowed to centralize certain corporate level services very efficiently

Coherence with Exalogic

- Two Exalogics located in two geographically separated Data Centers (Hermosilla and Valdemoro)

- Currently using an extended cluster architecture (cluster distributed across both Data Centers)

- In the short term it is expected to have a separate cluster per Data Center in order to take advantage of the **Infiniband** Network within Exalogic

- Access to the cluster is always via a Coherence*Extend proxy

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Lessons Learned

- Data Replication between Data Centers:
  - Push Replication vs. Multiple Writes

- Query optimization using composite indexes
https://blogs.oracle.com/OracleCoherence/entry/query_optimization_using_composite_indexes

- It is essential to implement a system to monitor and control the functional behavior and performance of the components within the Coherence application