

SAFER PHARMA FOR THE WORLD, AN INNOVATION INITIATIVE FROM ALTRAN

# Control towers for the pharmaceutical supply chains

How can the pharmaceutical supply chains increase transverse visibility  
and be more collaborative to enhance their resilience?



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## Edito

The extended supply chain of the pharmaceutical sector is complex and dispersed, with multiple internal, public and private stakeholders. It is characterised by a long and fragmented distribution: even if direct distribution to hospital pharmacies is often preserved, the sale to wholesalers and parallel distributors creates a major disruption to continuous and transverse visibility. Experiencing major assaults from counterfeiting, the industry must be adaptive and transform itself to gain in efficiency, warrant its sustainability and patients safety.

With higher inventory protection, the pharmaceutical supply chain is running with twice higher total costs than the average of the other industries. As a promoter of innovation, the Altran group is proposing to the health world a new norm of excellence for its pharmaceutical supply chain based upon a global approach of resilience and collaborative processes supported by multi-enterprise control towers.

Conceived upon the principles of airport control towers, a supply chain control tower is an organisation and a global solution which is supported by a central platform. Its mission is to encompass all operations throughout the supply chain and to foster a dynamic willingness to optimise its global performance.

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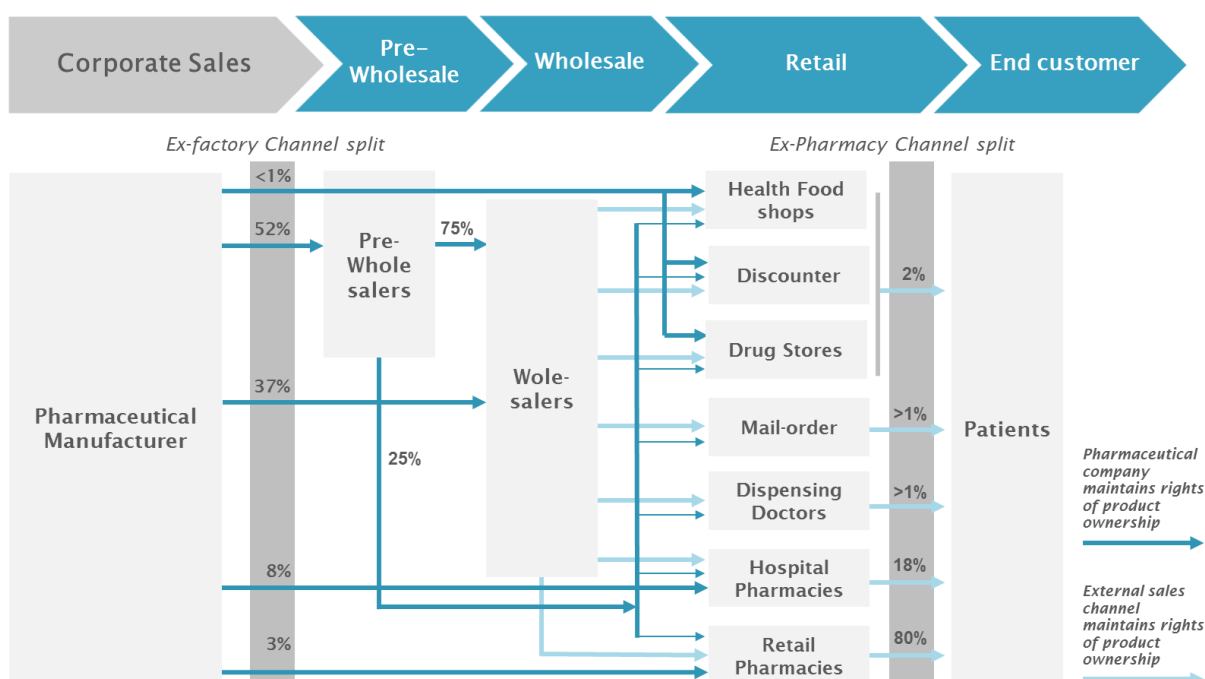
### Background

The supply chain of large pharmaceutical and healthcare companies is very complex and dispersed, with multiple business partners and stakeholders. If the upstream supply chain is rather simple made two main tiers (Chemical active principles and packaging, the outbound distribution is quite intricate with lots of stakeholders, long routes and diverse schemas extending to private or hospital pharmacies and patients. The pharmaceutical supply chain also contains product and event specific sub-supply chains like the clinical trial supply chain, the reverse supply chain activated in case of recalls or the cold chain for bio-products or vaccines. As distribution channels diversify, distribution patterns are very variable from country to country and include direct to patient, direct to pharmacy as well as full line/reduced line wholesaler models. In Europe countries, the dispersion of price regulations has generated parallel distribution where repackaging occurs at local vendor sites.

### A COMPLEX SUPPLY CHAIN WITH MATURITY GAPS

The pharmaceutical industry is growing at an accelerated rate from 3 to 7% for developed countries and around 20% for emerging countries, mainly due to the increase of population on earth and the progressive access to health worldwide. Due to patent expiration affecting many blockbuster drugs simultaneously, the product portfolios have to be extended pushing companies to accelerate the rates of R&D and M&As. It is also facing a fierce global competition from generic manufacturers forcing the margins to decrease and stimulating lots of transformations. Protected by comfortable profits and based on the imperative to deliver prescription medicines with superior service levels to the patients, the traditional tactical approach has led supply chain executives to hedge the demand variability with large inventory coverage (170 to 220 days i.e. 4 to 6 times the average of the Consumer Packaged Goods industry<sup>1</sup>) in distributed outbound stocks and transits, in order to sustain superior service levels (between 95% and 99% in best cases). However the drawback is that the resulting global cost of the supply chain is running in average twice the performance of the industry. This had complementary impacts on the willingness to improve supply chain maturity concerning demand or collaborative planning, global performance optimisation as well as lean supply chain execution.

### Channels to Market (Germany 2005)



Source EFPIA (2005) – A.T. Kearney research & analysis

At the same time this industry is put terribly at risk by counterfeiting which is the largest counterfeit market in the world worth between 200 and 450 Billion USDs<sup>2</sup> and the fastest growing one. This makes the Pharmaceutical supply chain the most uncertain one although there is a great disparity of counterfeits presence between the developed and developing countries. Still today, Pharmaceutical companies are driven by Marketing and Regulatory compliance, not recognising the differentiating power of global supply chain management. They lag many other industries in various key working capital performance measures (Inventory, receivables and payables).

## A CHANGING WORLD BRINGING INCREASING CHALLENGES

Today, under the pressure of generic manufacturers, the increasing competition of the emerging countries and more stringent regulations, the pharmaceutical industry is facing drastic pressures to reduce global supply chain costs. The operating costs increase as at the same time market regulated prices are driven down which calls for innovative ways to manage the supply chain.

There are multiple pressures to change and areas for risk assessment for the pharmaceutical and healthcare industries, which include:

- **Increased government Intervention in a growing number of countries:**

Price controls and price setting, reimbursement pressures, medical product evaluation and selection, regulated margins or negotiated discounts, selective patent enforcement, and others.

- **Globalisation:** The demand in emerging markets is diversified with new consumer expectations and specific regional remedies must balance future market size, government policies, and humanitarian benefits. Distribution in Asia is evolving dynamically which brings specific visibility and continuity challenges, issues arising due to increasing security concerns, country-specific regulatory compliance, and limited scope of infrastructure.

- **Evolving Business Models:** No single model fits all organisations and regions, therefore adaptive, flexible, and efficient models are being conceived by challengers.

- **Mergers & Acquisitions:** As niche start-ups continue to emerge, we see consolidation of bigger companies willing to protect their competitiveness globally. Merging supply chains effectively is critical to achieving projected savings, while meeting regulatory and marketplace requirements.

1. A vision for the future: role of global standards in Healthcare – Mc Kinsey & Company Oct 2013

2. [www.iracm.org](http://www.iracm.org)



- **Integration and increase of non-traditional pharmaceutical distribution, including Online:** Traditional captive market channels are being challenged by new players and channels including consumer-direct fulfillment and 4PI distributors, coming with innovative ideas and more competitive approaches. Traditional distribution on the other side tends to integrate vertically across regions and horizontally with dispensing providers.

- **Internal vs External Operations:** Evaluating the option of leveraging logistics service providers to focus on core strengths and reduce internal costs is an industry best practice. Re-internalising distribution is also an option to balance the risks and trade-offs. Globally, we see that increased manufacturing and distribution outsourcing as created a high level of dependency and brittleness in the face of global counterfeiting.

- **Supply Chain Security:** We see global security initiatives at country and regional levels (like the ESM and ETact at European level) which need to be streamlined in order to develop brand integrity and patient safety perspective. The human risks involved with the healthcare industry, especially for pharmaceuticals and medical products, raise the requirements bar in visibility, performance, and operating margins.

- **Highly Informed Consumers:** At the same time the consumers are more and more connected and aware. Internet-based self-diagnostics on open social networks make keeping information accurate and proactive marketing a critical business focus. The consumer behavior and the need to get access to authentication, connected care and pharmaco-vigilance information calls for a much more patient driven supply chain.

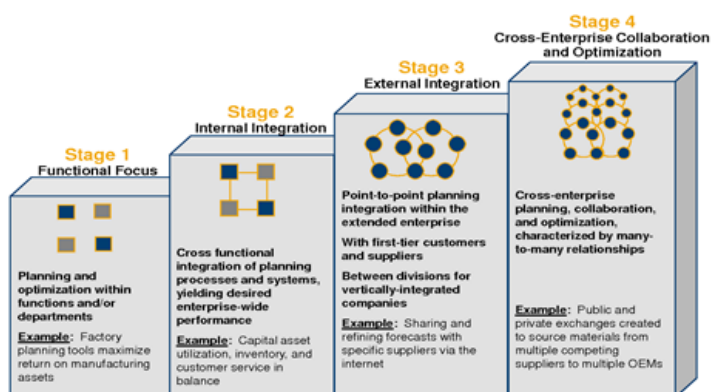
## EVOLVING REFERENTIALS

Traditionally consulting companies as well as innovative leaders refer to maturity and best practice referentials to get initial assessments of current situations and as guides to identify improvement levers. Whether they use four or five steps, those maturity models include an internal integration step where more of the companies stagnate, an external integration step then the ultimate step covering cross-enterprise collaboration and optimisation. This is called the global synchronisation step and is believed to describe the most advanced way to sustain supply chain global performance.

The traditional supply chain management has matured last ten years with a focus on these new concepts of global visibility, global synchronisation and multi-partner risk management. The Consumer Driven Value Network (CDVN or DDVN – Demand Driven Value Network) referential which has been proposed by Gartner<sup>3</sup> bears the merit to define how to develop the business orchestration within the end to end supply chain, together with agility, responsiveness, flexibility and collaboration. This framework is obviously a guide to stimulate innovative processes for the pharmaceutical supply chain as it operates in a pull mode based on consumer demand as opposed to the traditional push to market planning and distribution approach.

supply chain synchronisation starts with sharing product data then standard transactions (like orders, receipts, stock movements, exceptions) then it extends via coordination processes to planning and proactive execution monitoring. It relies on the shared visibility of the flows and transits (including end to end traceability) and a narrow coordination of demand, supply and product variability. It involves the management of timely and accurate information, management by exception, dynamic improvement of transverse processes as well as the coordination and talent development of the implied personnel.

## Supply Chain maturity model



Source: PRTM

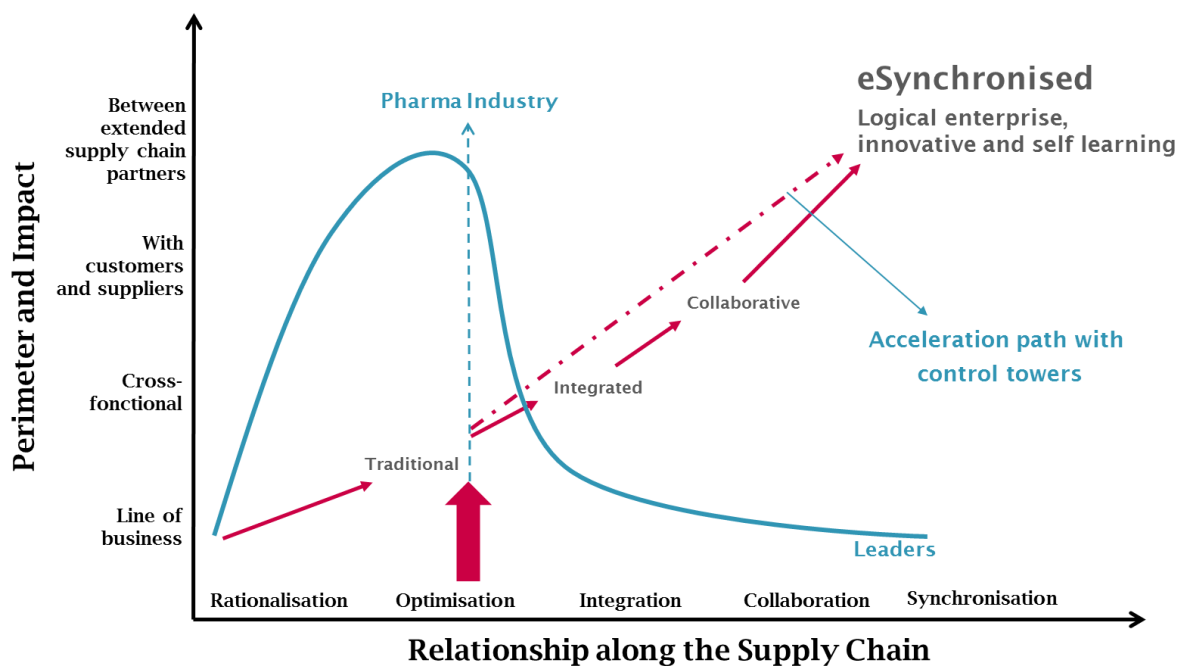
## Requirements to the supply chain

In order to sustain the profitability of the industry while meeting those challenges, it is necessary to find innovative ways to drive major operational efficiencies. Although the industry has adopted traditional practices like focused outsourcing (niche distributors, contract manufacturing), lean-sigma continuous improvement programs, factory track and trace, conventional S&OP processes... it is unlikely that they will deliver the levels of performance which is needed to remain competitive in this ever changing environment.

Winners of the game will have addressed deeper transformations to increase the maturity in terms of collaborative planning and execution, overall resilience, customer responsiveness and agility. Following the examples of the other industry leaders, they will take earlier advantage of the most advanced concepts and technologies to:

- develop their end to end visibility (over the extended supply chain) and surveillance capability (on near real time);
- better manage and reduce overall complexity (rationalising portfolios, reasonably segmenting their supply chain, integrating to the right level);
- reduce overall lead times (to market, cash to cash etc.) and increase cash flow
- develop tactical and operational flexibility;
- stimulate collaborative practices in both planning and execution;
- take advantage of the variability and risks to examine tradeoffs and select improvement opportunities;
- develop more advanced brand protection and global track & trace strategies in line with country and regional initiatives;
- drive the cultural change in alignment with their supply chain ecosystem.

3. <https://www.gartner.com/doc/1900216/demanddriven-value-network-orchestration-key>



### RISING OPPORTUNITIES WITH NEW TECHNOLOGY

At the same time, the cloud technology has introduced the possibility to build multi-enterprise solutions and enable the end to end integration of actors independently of the existing systems. We can now build flexible, secure and scalable applications which enable a virtual organisation to manage the critical points of a supply chain community and orchestrate its actors. With the adjunction of adequate processes and interoperable middleware capable to exchange data in various formats with diverse systems, this technology provides a unique possibility to develop the synchronisation of extended supply chains.





## WHAT IS A SUPPLY CHAIN CONTROL TOWER?

Extending the concept of a war room to standard operations and proactivity, providing extended visibility just as the airport control towers, a supply chain control tower is an organisation relying on a central platform (disposing of the technology, resources and processes required to capture rapidly and exploit the data coming from the extended supply chain), missioned to share the best short term visibility possible, make informed and profitable decisions for the community and synchronise the common execution.

It is the central point which overarches and complements the fragmented systems in the supply chain to animate this conceptualised layer of transverse processes. It is just a new layer of technology on top of all the existing systems to provide the linkage for visibility, analytics and what if simulations that will complement and better leverage them to generate differentiated values. To be noted that it would be too complex and hazardous to implement this concept with the ERP technology and conventional EDI point to point connectivity.

A supply chain control tower provides a centralised and standardised control mechanism for proactively managing, executing, and reporting “events” in the supply chain. Decisions and actions are real-time driven, based on an end-to-end view of what should happen, what is happening, and what will happen.

A supply chain control tower is the most effective way to collaborate and synchronise actions across the partner network.

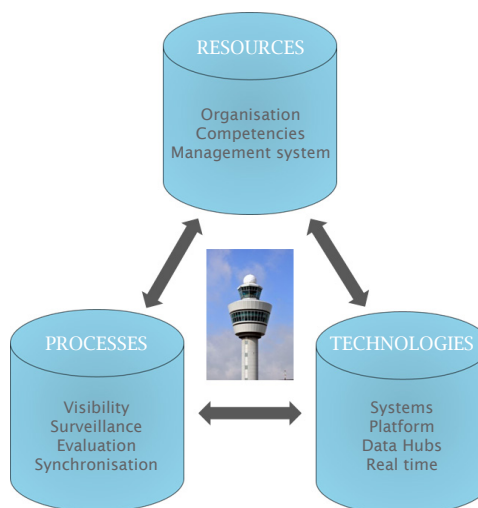


The three pillars of a supply chain control tower are resources (organisation, skills and a management system), technology (systems, cloud platform, data hub, interoperable middleware, real time engine for alerts and propagation of information) and processes (visibility, surveillance, evaluation and synchronisation).

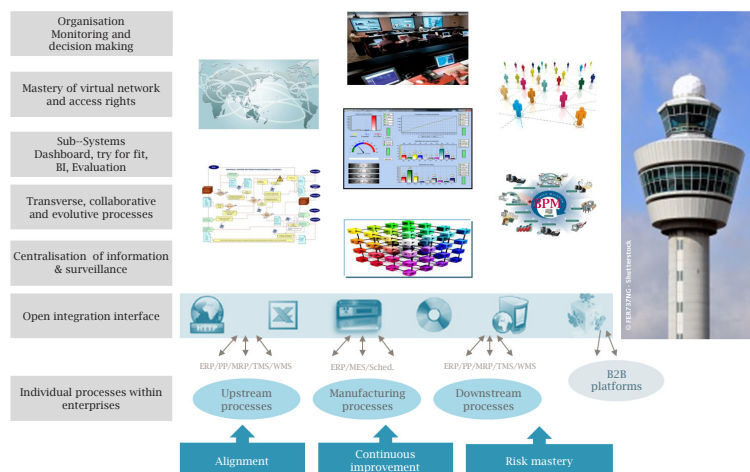
Key processes supported by a flexible Business Process Modeling engine involve:

- global performance tracking with adequate dashboards and trendanalytics, the visibility layer encompassing the capture of key demand, supply and product events;
- integrated collaborative planning to provide a capacity to anticipate globally and set a sound base for execution, optimising the overall inventory and operational costs, sensing demand evolutions, balancing supply-demand globally and propagating demand;
- supply chain surveillance with rapid exception and risk identification, impact and fix evaluation, data quality and cost overrun monitoring, supply chain intelligence. We can extend this with regulatory surveillance filtered to supply chain impacts using push-pull technology;
- management of execution reactivity with causal analysis, collaborative decision making and execution, crisis management and fulfillment orchestration;
- continuous process and performance improvement supported with adequate change management.

## The three pillars



## The major components



With all those ingredients, a control tower gives the promise to change the speed of transformation toward higher maturity, more empowered consumers (patients) and global resilience. Early adopters in other industries are already showing dramatic improvements and differentiation on their markets.

## CRITICAL SUCCESS FACTORS FOR IMPLEMENTATION

A typical implementation involves practically four phases, including:

- (1) the strategic definition (priorities, key processes, flows and actors, management system, business case, deployment plan);
- (2) detail design of organisation, processes and architecture;
- (3) initial set up and stabilisation;
- (4) volume onboarding of partners and activation of PDCA (Plan-Do-Check-Act).

It is advised to get the support of experienced and innovative consultants to make the initial implementation a success and help selecting safely the right technology vendors. It is important to consider critical success factors before embarking on a control tower implementation:

- Sharing a common vision across key partners;
- Selecting and developing the adequate skills is critical as well as building if possible a cross enterprise team, empowered by sponsors and accountable;
- Giving proper incentives to the empowered team;
- Selecting the appropriate solution and architecture is also touchy as the technology is rather new. Yielding to the temptation of starting with a visibility layer only using a 4PL vendor is not advised, unless he can bring the assurance to build up the adequate dimensions and processes of the control tower later on and to manage the skills in an efficient and collaborative manner;
- Knowing the extended supply network. This involves mapping the manufacturing and distribution partners worldwide, to identify the weak points and the critical chain;
- Defining a multi-level pilot implementation with collaborative processes, key events to track, key decisions to be made, global KPIs, etc.
- Not skipping the ability to quickly plan and compare alternative scenarios;
- Harmonising processes, basic data and exchange formats;
- Simultaneously developing strategic partnerships to help reach the alignment of policies and practices among actors;
- Take into account complexity and criticality management to identify the right approach;
- To reach the alignment with wholesalers and parallel distributors is key in the pharmaceutical supply chain as today, there is a severe loss of traceability at this level with the sell-buy distribution model. This is key to develop a convergent protection strategy.

In order to secure a safer world for the patients and build a strong bulwark against counterfeiters of all kinds, our vision for the Pharmaceutical industry is a uniform and compatible set of interoperable control towers at pharmaceutical company, distribution partners, country and regional levels. To enable reach this level of overall alignment and integration, political institutions have most certainly a role to play, avoiding over regulation of margins and prices, streamlining standards, focusing on increasing the robustness and reliability of the overall traceability.



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We can expect the following benefits from a control tower implementation:

- Improvement of the global performance of the value chain embracing more easily its dynamic changes;
- Reduction of the overall risk level and resilience;
- Ability to translate demand signals into profitable and coordinated supply fulfillment decisions leveraging all systems in place, internally and externally;
- The ability to manage reasonably differentiated product lines and channels with adequate strategies and operational monitoring;
- Development of decisive competitive advantages like Time to Market, Order to cash cycle times, global flexibility, 2x increase in problem resolution speed, 2x increase in new product time to volume;
- Acceleration of integrated continuous improvement over the extended community;
- Acceleration of innovation;
- Organisation learning and cultural maturity alignment;
- Increased brand protection and efficiency of product recalls.

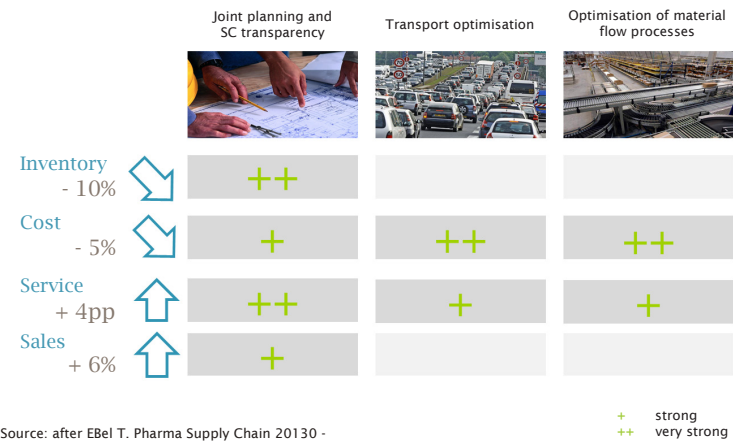
4. Strength in Unity: The promise of global standards in Healthcare – Mc Kinsey & Company Oct 2012



BENEFITS FOR THE PHARMACEUTICAL INDUSTRY PLAYERS

The pharmaceutical industry will take advantage of the supply chain control tower, emerging best practices and IT technology, to better integrate their ecosystem internally and externally. A recent study by Mc Kinsey & Company<sup>4</sup> as identified large performance improvements across many areas for downstream collaboration only, leading to over 5% in cost reduction, 10% in inventory reduction and 6% of improvement in sales. Gartner relates that the early CDVN adopters do save up to 30% of inventory and increase their perfect order fulfillment rates by 15%.

Clear case for impact from downstream collaboration



CONCLUSION

Supply chain control towers will bring more patient centricity enabling to better integrate further on the new progresses of personalised and telemedicine, connected pharmaco-vigilance, anti-counterfeiting, customised value-added services and mobile health.

As all of the executives and actors in the supply chain industry share the same noble objective and commitment to improve patient safety, we are confident that many leaders will take the opportunity to develop such solutions and pave the way to a new standard of excellence for the pharmaceutical supply chain.



## Daniel Miroglio

Daniel Miroglio is an expert supporting international corporations in supply chain, industrial performance and brand protection/traceability transformation initiatives. Daniel has an extensive experience in manufacturing, operations and IT consulting in various industries acquired in senior roles in High Tech and management consulting. Within Altran, he manages the Value Chain Innovation practice and is the leader of the innovation initiative Safer Pharma for the World aiming at developing the global resilience of the pharmaceutical supply chain.

Daniel is the author of multiple publications in the field of Supply Chain Risk Management, Strategic alignment, Supply Chain control towers and Resilience.



## About Altran

As global leader in innovation and high-tech engineering consulting, Altran accompanies its clients in the creation and development of their new products and services. Altran's Innovation Makers<sup>1</sup> have been providing services for thirty years to key players in the Aerospace, Automotive, Energy, Railways, Finance, Healthcare and Telecoms sectors. Covering every stage of project development from strategic planning to manufacturing, Altran's offers capitalise on the Group's technological know-how in five key areas: Intelligent Systems, Product Development, Lifecycle Experience, Mechanical Engineering, and Information Systems.

In 2013, the Group generated revenues of €1,633m. Altran now has a staff of almost 21,000 employees in more than 20 countries.

[www.altran.com](http://www.altran.com)

<sup>1</sup> Employees of the Altran group

## LIST OF SOURCES

A vision for the future: role of global standards in Healthcare – Mc Kinsey & Company Oct 2013

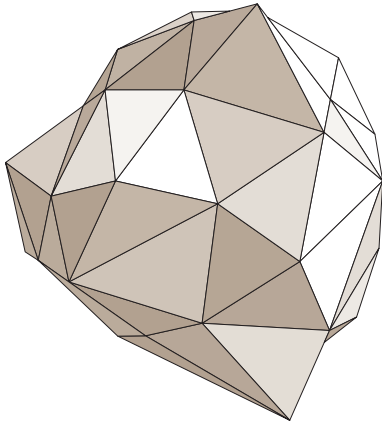
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