

2019 Strategic Analysis for Sensata

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1 Executive Summary

This report analyses Sensata Technologies business and market and finds they are balancing a market performance commitment with an urgent need to transform it's technology offerings into new solutions. The electrification and automation across automotive and HVOR are the primary drivers. Sensata needs to set strong objectives to maintain its position with incumbent businesses in those markets (as they also try to pivot) but in parallel, set challenging objectives to upskill, adapt and be flexible & fast enough to work with emerging customers. Strengths of the business have been identified to leverage in the approach to new customers. Staff skills, team structures, collaboration and cross functional systems focussed product solutions will be key areas to develop. The brand has value but consideration should be given about making it current & synonymous with solutions for new markets. Nuturing the employed talent base where relevant will be key to building necessary skills as the market competition is limiting access to necessary data & systems skills.

2 Strategic Concerns

Sensata's (Sensata Technologies) operates in predominantly in automotive, aerospace and HVOR (Heavy vehicle and Off Road) markets providing critical sensing solutions. In other words, we focus on making sensors that are very challenging to design & manufacture (a small realm of competition) for critical needs (high consequence of failure) and on this combination we can charge more per device than similar cost based commodity items. This is what distinguishes Sensata to both customers and investors.

Here is an excerpt from the latest market report:

Business Vision and Strategy

We are a leader in designing, customizing, and manufacturing innovative sensor and control products for mission critical application to improve the safety, efficiency, and productivity of our customers' products.

As evidenced by our deep-rooted customer relationships forged over a 100-year history, we differentiate ourselves by working closely with our customers to design and manufacture unique solutions that meet their complex and evolving requirements. Moreover, our performance, quality, and reliability, together with our global manufacturing scale, help to create and sustain long lasting bonds with our customers.

We strive to outperform the markets we serve by delivering organic revenue growth in excess of changes in underlying end-market production levels. We have leading and expanding positions in markets with attractive, long-term growth opportunities and we are well positioned for growth in the industry trends of clean and efficient, electrification, autonomy, and smart/connecting solutions. We leverage our global manufacturing capabilities to drive productivity gains, grow earnings, and further expand margins. We augment our organic growth with a balanced capital deployment strategy that leverages our strong cash flows, healthy capital structure and a proven model and framework for integrating acquired businesses.

We execute our strategy with a disciplined focus towards targeted business priorities that guide and align our actions to the needs of our customers, shareholders, and employees. We operationalize these priorities through a global management system that drives a culture of responsible performance. The Compensation Committee annually reviews the designs of our short- and long-term incentive compensation programs to confirm they continue to be aligned with and promote the execution of our business strategy. The table below illustrates the connections between our business objectives, strategy, and incentive-based compensation metrics which we believe leads to the creation of shareholder value.

Figure 1 - Business Vision & Strategy (Edgerley, 2019)

Importantly, the perpetual market incentive has been the commitment (and successful delivery) to outperform market growth.

The report also highlights the key risks facing Sensata as “economic risks, financial risks, legal and regulatory risks, cybersecurity risks and others” (Edgerley, 2019).

As automotive is almost 50% of Sensata's business, let's take a look at the market to understand the challenges the company is facing.

2.1 Market Analysis

2.1.1 Auto

Deloitte's 2019 Europe Report provides a simplified opening summary of changing consumer interests, see Figure 2 - Evolution of automotive consumer interests.



Figure 2 - Evolution of automotive consumer interests (Deloitte Development LLC, 2019)

In short, we see the market evolution described, after 100 years of a steady iterative improvement cycle in automotive we are seeing a technology fuelled pivot from the incumbent combustion automotive to electrification. Further more, the way in which people use and view vehicle is changing, driven by economic restraints inhibiting ownership and environmental consciousness (particularly in developed regions).

Percentage of consumers that would most trust traditional automakers to bring fully autonomous technology to market

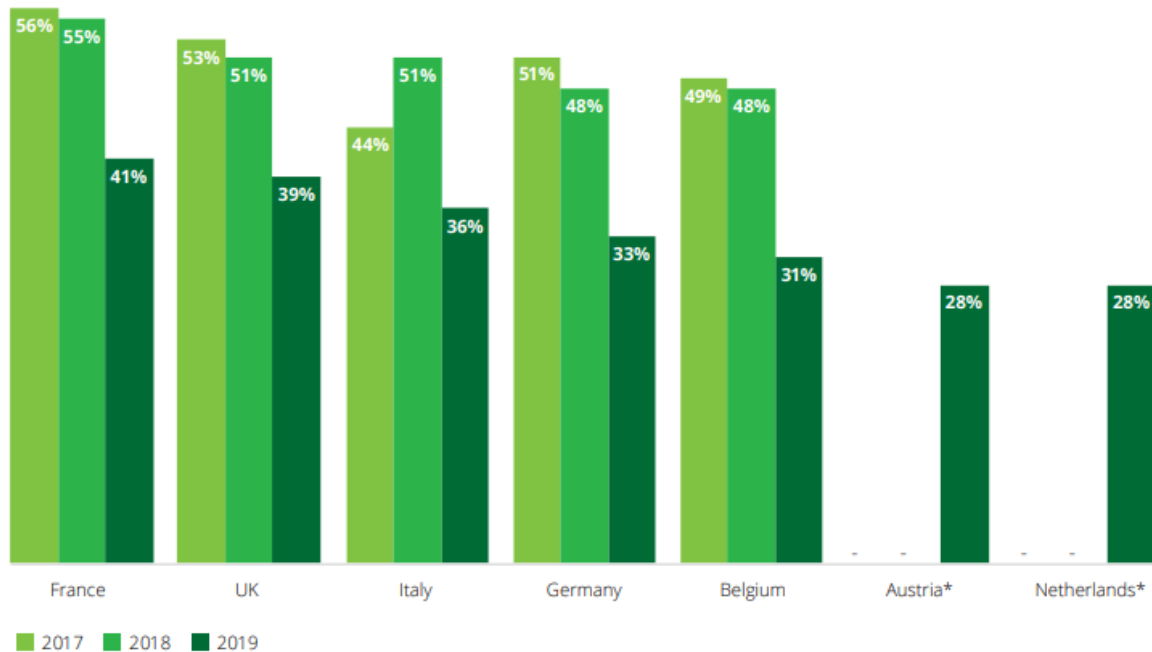
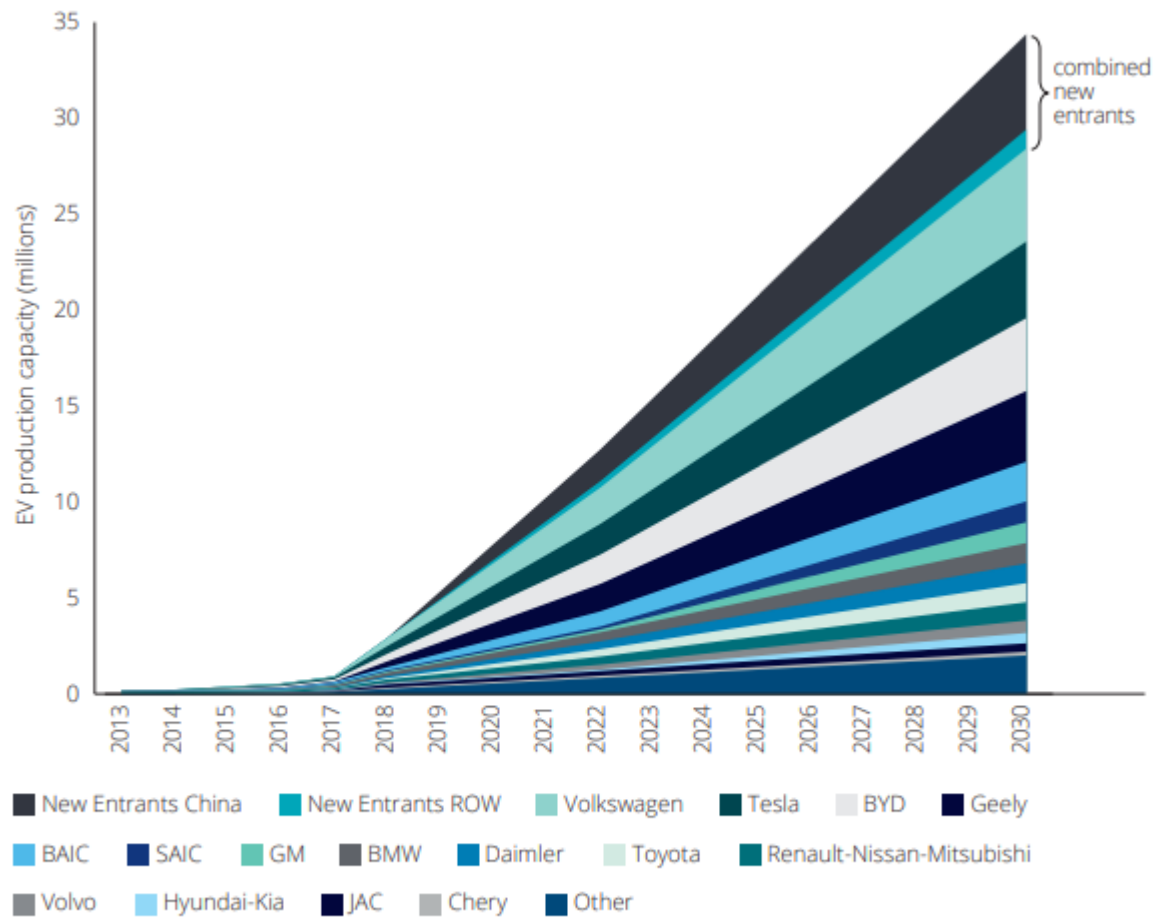


Figure 3 - Consumer confidence of incumbent OEMs to deliver AV technologies (Deloitte Development LLC, 2019)

Figure 3 - Consumer confidence of incumbent OEMs to deliver AV technologies should serve as a warning to the automotive supply chain about the reliance they load on traditional partnerships. Not only is the technology requirement changing but the successful providers of electric / autonomous vehicles are increasingly likely to be new players to the market.



Source: Deloitte analysis, IHS (2018), CAAM, IEA, watter2buy, evobsession, Gasgoo AutoNews, Cleantechnica, SinaAuto, Xinhuanews, Yiche, ifeng

Figure 4 - EV Manufacturer Forecast (Deloitte, 2019)

However, let's bring this revolution into context. While consumers, government and industry alike are in recognition of the change to EVs, the market portion is small,

currently at stable at around 2% since 2017 despite promising trends in adoption.

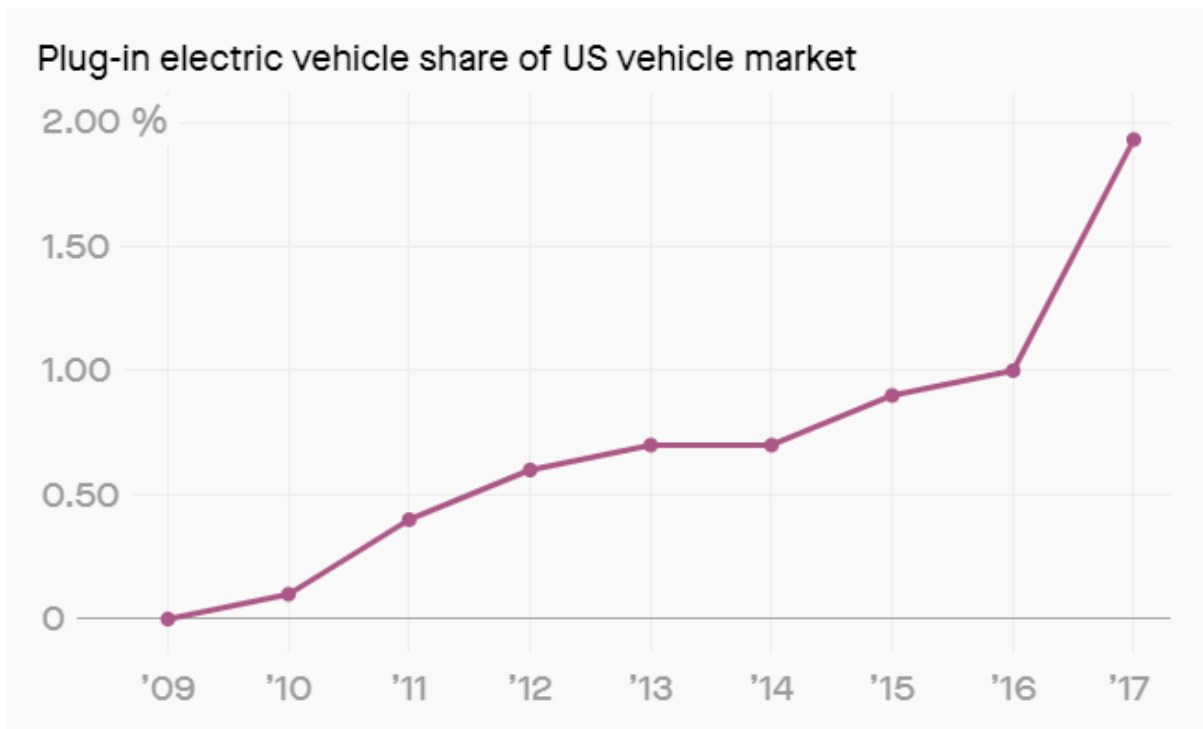


Figure 5 - EV market share in the US (Coren, 2019)

The migration to EV is a compound decision that relies upon the affordability of the vehicle, the maturity of the vehicle, consumer knowledge, charging infrastructure, government incentives, legislation, trade agreements, effective range vs lifestyle needs, etc etc. As such, the model by which car makers engage consumers is also changing. No longer is the vehicle enough, but the smart & connected solution is a key part of the sale. With this in mind, Deloitte estimates that the market will reach tipping point in 2022 when the cost of ownership of an EV is on par with an internal combustion engine counterpart. (Deloitte, 2019)

It is clear that we are in a decade of transformation relating to passenger cars.

Looking at the major incumbent automotive OEMs we can see evidence of economic struggles as they attempt to turn their huge, specialised industries into... well, into something else – it's not apparent what this industry will look like in a decade's time.

There are clear areas that the OEM are experiencing change:

- Brand
 - Increasingly, the OEMs are making distinct efforts to show environmental consciousness and ditch the old “horsepower” related value. A quick browse of recent advertisements underline this brand transformation.
- Customer experience
 - Not such a radical change here but the generational (boomers, millennials, Y, Z) differences in expectations, sale method, etc are changing how the OEMs connect to consumers and sustain the relationship. Social media has also transformed the marketing methods and exposure of the brands.
- Production Strategy
 - Tesla and the ‘mega factory’ is a notable example of the potential change required for large scale EV production. PWC states OEMs will be compelled to corral factory costs, primarily because the fulsome research and development and M&A outlays they made in order to design and develop entirely new kinds of automobiles could cut deeply into potential profits. As a result, the role of robotics and automation in factories will rise exponentially as machines are increasingly relied upon to speed up assembly processes and reduce expenses. Smaller crews will be needed to build electric vehicles, which have fewer parts and simpler drive trains than internal combustion engine automobiles. The combination of these factors will likely slash the global auto industry workforce at least in half by 2030. (PWC, 2019)

- Talent
 - New technology demands new knowledge and skills to develop and deliver. The talent market is fiercely competitive with high demand for data science, systems engineers and related fields. There is a shortage today and companies are scrambling to find and keep these key assets.
- Business Model
 - In a push to bridge the gap from EV costs today and the current palette for vehicle costs, decontenting (the art of removing features and functions to save cost) is increasingly likely in the next push by OEMs to get their EV solutions to market. This opposes the history of car making in general. However, Dacia is a great example of this model today with traditional vehicles (executed under an alias by Renault to de risk brand damage).

Sensata is tied to the biggest change the automotive industry will see since standardisation and scale in the early 20th century.

2.1.2 Aero

Aerospace markets are not seeing such radical transformation however drivers to be greener are rising to the top of design priorities. Our product offerings do not directly impact on this today. Despite societal pressure to reduce air travel, the industry continues to see growth and as such, steady sales of aircraft. Worldwide shipments of aircraft were up 15% in Q1 2019. (Forecast International, 2019)

2.1.3 HVOR

HVOR industry is also on the road to digital transformation but unlike automotive, with a primary incentive to optimise operations. “Fleet Management” is embracing the possible insights offered with connected vehicle such as those highlighted by Deloitte in Figure 6 - Core service offered in fleet management .



Figure 6 - Core service offered in fleet management (Deloitte Touche Tohmatsu Limited, 2019)

Specifically relating to HVOR, we can see the focus for digitisation of vehicles in

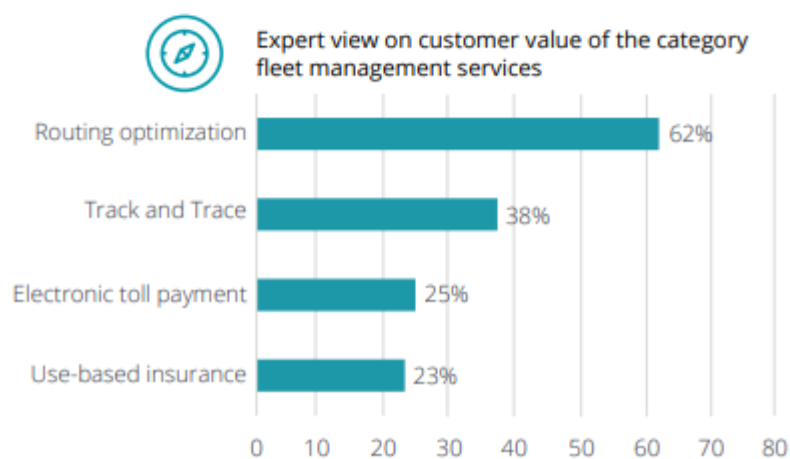
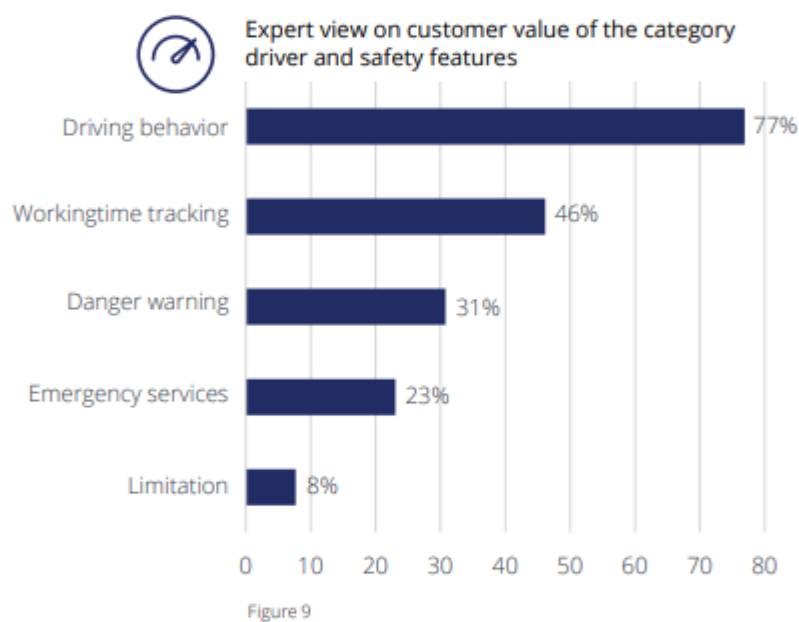
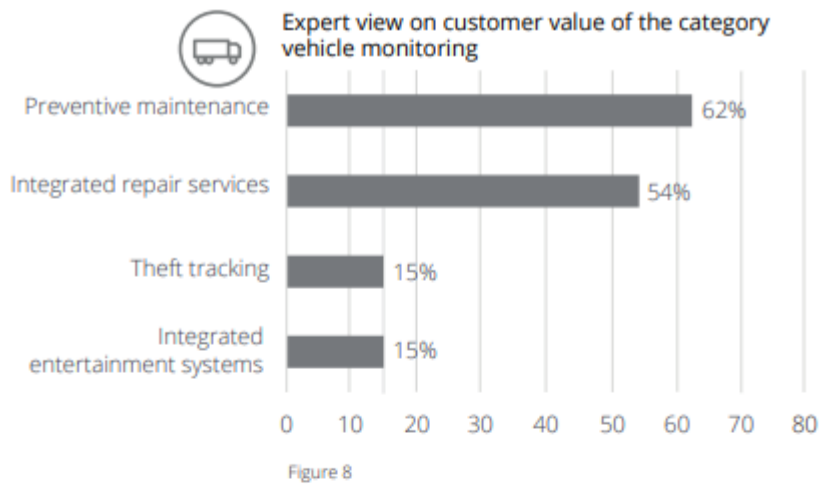


Figure 7 - Expert views on digitisation for HVOR (Deloitte , 2016)

Furthermore, the telematics market opportunity is underlined as being viable in developed regions only. Interestingly, the hardware market (sensors and devices) is relatively flat in contrast to an exponential revenue growth in software that parallels the change in technology offerings – see Figure 8 - Global revenue forecast of Telematics 2016-2026.

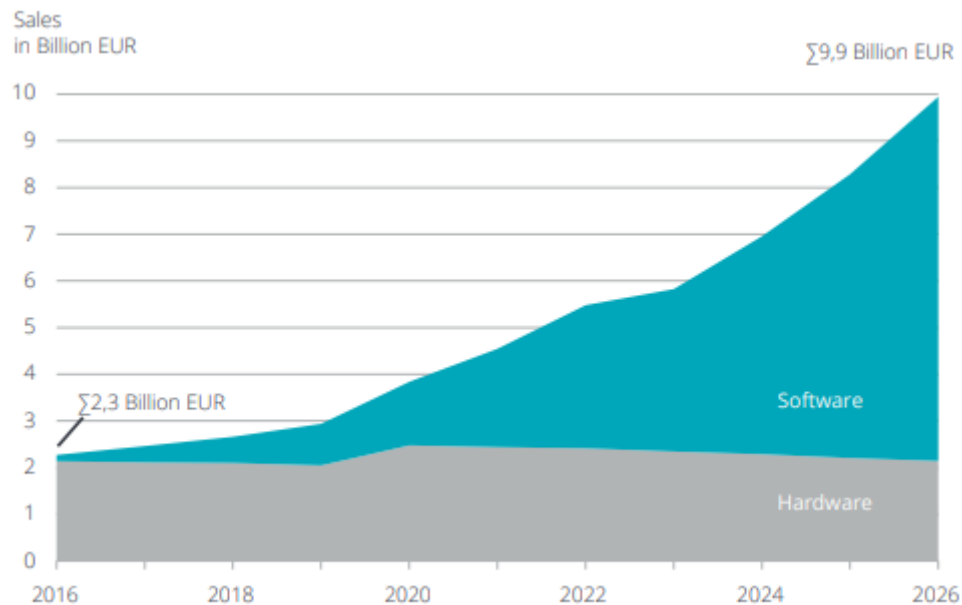


Figure 8 - Global revenue forecast of Telematics 2016-2026 (Deloitte , 2016)

This highlights the investment required by Sensata in Software & Systems over the traditional hardware focus to deliver value to future customers.

2.2 Strategic Analysis

To bring this landscape into context of our business a SWOT model has been used, see Figure 9 - SWOT of Sensata.



Figure 9 - SWOT of Sensata

Sensata's business is governed by a category matrix model which until recently has been an effective limiter in seeking opportunities outside our comfort zone. This matrix weaves market verticals (Aero, Auto, Industrial, HVOR) with product categories (APT, MSG, TPMS, MSP, MEMS, EV, S&C). EV and S&C have just been added this year in an attempt to seek and prepare for new market and technology opportunities.

2.2.1 Today's Strategy

Subsequently, strategic priorities for Sensata in 2019 are as follows:

- Fast customer response – own it
- Build leadership in electrification

- Zero defect quality
- Deliver organic growth well above end markets

Here we see recognition and focus on the electrification drivers influencing the auto market primarily. Additionally, we see continued drive to outperform the market in a bid to keep investors happy. Zero defects reflect the expectation of our customers and the customer response is also highlighted as something to get better at on the back of changing expectation for suppliers to treat each customers as the only priority with 1:1 support.

Measures and influencers of culture have been provided in the form of behavioural categories:

- Developing Teams & Talent
- Model the Way
- Customer Focus
- Driving & Achieving Results
- Functional Excellence
- Teamwork

These broadly compliment the priorities of the business and allow for development of the culture necessary to deliver.

2.2.2 Today's Governance

Sensata operates a Results Based (Houle, 1997) governance model in that the board oversees operations but whilst delegating management to the executive team, treat the executive director as a full partner. The board has been known to interfere with when results have been different than expected.

Together, the priorities and behaviours are set by our leadership with support of the board.

2.2.3 Today's perception

Middle management and lower struggle to see the context shaping the strategic objectives. Analysis is not provided. Although there are clear resources such as the market report (Edgerley, 2019) the general employee population are not inclined to seek a text heavy document like that. Annual updates on objectives do not discuss market conditions, change strategies, the cost if we don't or the prize if we win. And if they are discussed, they are rarely put in terms the general population can decipher.

There is consistent sentiment that the business leaders are focussed on increasing revenues with a short term mindset - one eye on the market, one eye on bonuses.

This awareness gap needs to be redressed.

2.3 Strategic Opportunity

Adding this organisation governance knowledge to Figure 9 - SWOT of Sensata, a TOWS (Kendrick, 2011) has been developed in

Table 1 - TOWS of Sensata

Table 1 - TOWS of Sensata

	Strengths - Long term existing customer relationships - Comfort with technical complexity - Strong knowledge of design for automotive robustness & quality targets - Sensata has established system integration examples no other sensor competitor offers	Weaknesses - lack of familiarity with new providers / customers - Skills pool built on hardware today - Business model maybe restricting ability to transform
Threats - Market change outpacing our technology offerings - Skills shortage due to market competition - Preexisting brand perception associated with traditional systems	TS - Use the reliability and proven record of Sensata to bolster relationships relating to new technology needs - Lever the history and stability of Sensata alongside new partnerships and acquisitions to demonstrate to potential skills base that we are attractive - Celebrate the achievements of that brand to bolster profile	TW - Use our historic profile & competence as a comforter to customers and advantage over start-up / immature competitors - Leverage the experience across technology segments to build advantage over sole technology providers - Consider a new business segment to focus independently and with more flexibility for new markets
Opportunities - Presence in multiple market verticals allows for sharing of technologies - Selling data changes how we consider operational footprint - Building value in software reduces capital and depreciation impact on cash flow	OS - Add scrutiny to capital investment relating to traditional technology products and revise down repayment models to mirror market transformation - Leverage physical presence in regions to build native point of contacts and demonstrate business maturity through site tours etc.	OW - Launch a skills transformation scheme to aid internal upskilling and transfer - Identify partners who can help accelerate progress into big data telematics solutions.

It is clear that Sensata will still aim to generate market value and investment by outperforming the market growth. But it is also clear that to do this they need to

invest and transform. Traditional business models work for one or the other – rarely for both. This is fine but necessary line to dance. The “Blue Ocean” model may be an effective way to describe the position of Sensata today. The Blue ocean strategy is the simultaneous pursuit of differentiation and low cost to open up a new market space and create new demand. (Blue Ocean, n.d.)

3 Strategic Directions

An Ansoff (Ansoff, 1957) matrix has been developed to analyse the market for Sensata.

Table 2 - Ansoff analysis of Sensata

	Existing products	New products
New market	Market development Strategies - Smart and connected solutions linking our current sensors - Accelerating concept and technology transfer between segments as the “expert supplier”	Diversification Strategies - Downstream integration with fleet management providers in the form of data sales - Provide a sensor neutral (open source?) telematics system to build preference with customers (reduces the supplier system development needs for the customer)
Existing markets	Market penetration Strategies - Utilise existing sensor portfolio as signal provider for data systems - Utilise existing customer platform presence to offer upgrade / feature addition (in contrast to an all new competitor system)	Product Development Strategies - Utilise our technology knowledge & IP to develop sensor devices for new applications - Develop multi disciplined solutions team to address customer ambitions as a single point provider

Translating Table 2 - Ansoff analysis of Sensata in to considerations proposed by McKinsey's 7S framework (Mind Tools, n.d.) we start to get a flavour of the primary areas of change within the business.

- Strategy: this is clearly defined by the organisation (but not necessarily explained).
- Structure: putting key skills together, removing hierarchy and migrating talent to areas of key development may be necessary to win new opportunities in a timely, flexible manner.
- Systems: giving permission to "get it done" even if it means going outside the normal flow to win.
- Shared values: work hard together, win together – our business' future relies on it. Collaboration will be key.
- Style: leadership will analyse the landscape, set the direction and ultimately push, question and encourage staff.
- Staff: providing clarity, transparency and inclusion in the journey of change. Each person has to be on board.
- Skills: transforming the skills base of the people we have (where it makes sense) and bringing in new talent where necessary.

4 Strategic Implications

In order to effect the strategic changes the entire business will need careful consideration. Every employee should understand the status, the aspirations and the steps needed. Further more, the cultural expectations should be highlighted as the behaviours required to get there.

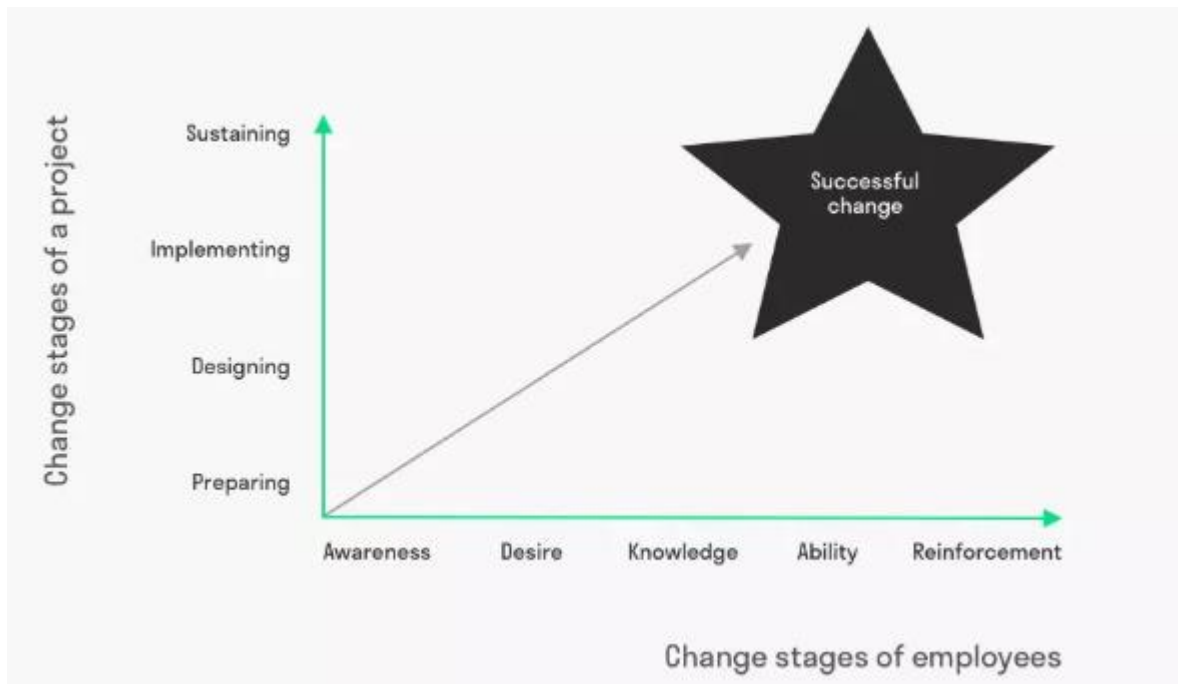


Figure 10 - ADKAR model for change (Mulder, n.d.)

Jeff Hiatt's ADKAR model represented in Figure 10 - ADKAR model for change, lays out the landscape for success from an employee perspective and the project or business.

Using this approach, the key themes from Table 1 - TOWS of Sensata & Table 2 - Ansoff analysis of Sensata have been re-evaluated below with a focus on employees.

1. Awareness

Report and present internally to the employee base to ensure understanding of the market forces, the new opportunities and the need for change. Section 2 of this report could be a good starting point.

2. Desire

The incentive is not just about keeping one's job, it is about a growing future for Sensata if we can change adequately and provide solutions for the new challenges and requirements in new markets and programmes.

3. Knowledge

Create a platform or portal to publish, track and share the business transformation and in more simple terms, progress against the objectives. This should be dynamic and drill down through strategy pyramids.

4. Ability

Bolstering learning & development teams to support the wider organisation in skills change will be crucial. This demonstrates commitment to staff in tangible ways. (It also underlines the need to be selective with this, do not invest in operations workers if those roles will benefit from attrition, do not invest in low performing staff).

5. Reinforcement

United voice & message from senior leaders, down through the management chain is essential to instil the belief. A managers workshop or conference could be effective in discussing concerns and aligning on the big picture.

Having considered the people centric impact a return to Muller's ADKAR approach and a pair wise comparison helps strengthen the focal points between business strategy and people in

Table 3 - Interaction Analysis.

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	Strategy	Structure	Systems	Shared Values	Style	Staff	Skills
Strategy		Today's structure is hindering us and needs more flexibility.	Tools need to keep pace with objectives.	Not significantly changed.	Should be less autocratic.	The staff voice is important to listen to.	Do our SLT have what they need?
Structure	Will drive small changes, breakout teams etc.		Tools need to improve flexibility.	Remove empire building and focus on effective teams.	Get comfortable with a flatter structure.	Encourage sideways movements.	Support and match the skills needs, not the reporting line target.
Systems	Could require new tools to get the job done.	Will put more reliance on effective systems for remote collaboration.		Systems should model compliance.	Systems need to be more conducive to sharing data.	Make it easier for people to do their job.	Ensure systems education is part of skills base.
Shared Values	No impact on today's values but getting comfortable with change will be essential.	Work together.	Tools should not inhibit or compromise any values.		Work together, not for someone.	Join the team.	Awareness is key.
Styles	More collaboration, more risk taking.	It's matrix, it will not always be a clear run.	Tools should improve collaboration.	Values should extend to leadership regardless of styles.		Be aware of different styles and the need for them.	Adaptability & awareness.
Staff	Change, learn.	Encourage movement.	Tools should connect people better.	Should be shared by all.	Embrace the differences, preserve respect.		Be generous in provisioning skill change.
Skills	Learn, adapt, source.	Share learning.	Tools should improve access to leaning.	Learning should become as valuable as experience.	Learn fast, step outside your box.	Empower yourself.	

5 Conclusion

Sensata will face significant change internally in its desire to adapt to the changes in the markets it currently operates in and it hopes to step into.

This will impact the structure, its people and how we work with customers. This report lays out the context today, makes recommendations of where Sensata can adapt and the impact of these changes.

Most importantly, given the rate of change, this exercise should be repeatedly at least annually to ensure the strategy matches the market forces and operating conditions.

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