# 10. ConnectedService: Transparent and Efficient.

Introducing the unique ConnectedService concept, the BMW 3 Series is setting new standards in service, maintenance, and repair. The most advanced telecommunication technology in ConnectedService ensures optimum clarity, transparency and efficiency, offering the customer even clearer and easier-
to-plan service schedules, shorter service times with his Service Partner, and lower cost of service. The service system is made up of Condition-Based Service, TeleService and the KeyReader.

Condition-Based Service uses existing systems and control units within the car permanently monitoring various components subject to wear as well as operating fluids by means of special, intricate algorithms. A new feature is that Condition-Based Service not only informs the driver on the current state of his car, but also ‘thinks’ for and on behalf of the driver: The driver is automatically informed four weeks in advance of a forthcoming service appointment,
for example in order to replace the brake linings or exchange the engine oil.

The data relevant to such service requirements is saved on a chip in the key to the car. Via an electronic reader, the KeyReader, this information then goes straight into the Service Partner’s computer, which issues a specific, job-related order on this basis. The big advantage for the customer is greater clarity on the work to be done and a better understanding of his car’s requirements. There is no risk of mistakes or misunderstandings, and service reception is both quicker and simpler, the Service Advisor having more
time for personal talks with the customer.

**Your Service Partner is already waiting for your car.**
The new 3 Series nevertheless offers even more: As soon as Condition-Based Service determines the need for service in the foreseeable future, the data registered is transmitted by BMW TeleService through a text message to the driver’s BMW Service Partner. There the Service Advisor knows immediately what kind of service the car requires without even having seen the car before. The only prerequisite is that the car must be equipped with the

optional BMW Business mobile phone preparation kit (option 633) and must be covered by a BMW Assist contract.

BMW TeleService allows the Service Partner to determine the work required on the car in advance and with a very high level of precision, enabling him to order any parts possibly required. This keeps the time spent in the workshop to a minimum, the customer's only job being to agree on an appointment at the workshop when he receives a call from his Service Partner.

**Precise service appointments saving time and money.**
Instead of rigid, distance-related service intervals, BMW has offered customers the BMW Service Interval Indicator ever since the '80s as a system reflecting the actual use of the car far more precisely. Now, in the
new BMW 3 Series, Condition-Based Service determines service appointments even more precisely, measuring the current state of parts subject to wear and tear as well as the condition of the car's operating fluids. Sensors and complex algorithms determine the service required, focusing on components subject to wear as well as time- and distance-related requirements.

As a result, Condition-Based Service is able to remind the customer exactly of his service appointments by means of an information signal in the instrument panel and, at the driver's request after having made the necessary settins, through the Display as well as warning signals should the driver for some reason fail to observe a service appointment.

# 11. Production: Networked and Flexible.

The BMW Group uses networks to optimise its own resources. For only a high-performance production network allows a quick and flexible response to customer wishes and market conditions constantly changing in the course of time. Networking knowledge at an early point and ensuring an outstanding commitment of associates within the production network, the BMW Group is able to build cars the world over according to individual customer requirements and with the high standard of quality people expect.

**The production concept.**
The high standard of flexibility in production of the new BMW 3 Series is based on close cooperation of development engineers and production specialists right from the start. Looking at the development of model variants throughout the last two generations of the 3 Series, we quickly see the ongoing improvement of flexibility: All derivatives of the new BMW 3 Series share one and the same identical front body section – and this is quite sufficient to meet all customer demands. On the former model there were three different body sections at the front, and on the generation before no less than 30 different front sections.

In vehicle assembly the “neutral main assembly line” forms the focal point in the production concept: Using so-called “integration modules” – for example the cockpit, the front-end and the doors – BMW production reduces the number of job processes and variants on the main line. These integration modules are completed in the process of pre-assembly and go just-in-sequence to the main line.

Developments of this kind in body production and assembly provide the foundation for highly flexible production structures not only within one plant, but rather throughout the BMW Group’s entire production network.
Flexible working time concepts, the separation of personal working hours from machine operating times, as well as production machinery flexible in terms
of variants and production volume also serve to quickly set off seasonal fluctuations, changes in the economy, as well as ups and downs in the product

lifecycle. In all, these modules provide the foundation for the profitable production of individual premium cars.

**The production network.**
Production of the new BMW 3 Series will start out at the four BMW plants in Munich, Regensburg, Leipzig, and Rosslyn, with Shenyang in China following somewhat later. These plants will build different variants of the new 3 Series and in some cases additional models in other series. This gives the BMW Group's production network sufficient freedom to adjust production capacities flexibly to market conditions. And to maintain a high level of efficiency and quality at all locations right from the start, the production concept rests on the following features and criteria:

- Identical plant concepts with flexible main lines and specific sub-groups.
- Single-tooling at the central press shop: Large body components such as the doors, lids, roof or side-frame are transported from a central production facility to their points of assembly.
- Identical testing and coding systems for the car's electrics/electronics.

The BMW Group's network philosophy serves furthermore to promote the successful cooperation of all locations. The old philosophy was to have all plants compete internally against one another, each plant striving for the best solution. Today the mission for each plant is to find the best solution for the network as a whole.

**BMW Munich Plant.**
BMW's Munich Plant is the original plant within the BMW Group's global production network of great historical significance. Initially both BMW aircraft engines and motorcycles were built in Munich prior to the first production of cars in the 1950s. Since then more than 7 million cars have come off the assembly line in Munich, where today 11,000 associates from more than 50 countries build approximately 800 cars and more than 1,200 engines a day.

The new BMW 3 Series will be built initially at the Munich Plant. Associates in Munich were prepared for the ramp-up of the new 3 Series at an early point, specialists from the Bodyshop, Paintshop and Assembly working from the start in the Pilot Plant at BMW's Research and Innovation Centre on the first prototypes. Now, given their experience, they are making a significant contribution to streamlining the ramp-up process at BMW's other plants.

Fully integrated within the BMW Group's global production network, the Munich Plant now builds the new BMW 3 Series Saloon flexibly according to customer requirements. Other highlights in Munich are the production of BMW's six-, eight- and 12-cylinder petrol engines, eight-cylinder diesel engines, as well as high-performance engines for BMW M Cars.

**BMW Regensburg Plant.**
In preparing for production of the 1 Series in a general process of expansion and reorganisation, the Regensburg Plant was also prepared for production of the new 3 Series. Benefitting from skilful production planning, standardised processes and highly qualified associates, the Regensburg Plant builds the BMW 1 Series, the new BMW 3 Series Saloon, as well as the Coupé and Convertible versions of the former model including the BMW M3 in a single-line system, that is on one main assembly line. Flexibility of this standard is quite unique throughout the global car industry.

The Bodyshop in Regensburg ensures a high standard of flexibility in building different models and series. The new floor plan assembly facility, for example, is able to build cars varying significantly in length. Rebuilt and enlarged dramatically in the last two years, the Paintshop is now one of the most modern and innovative facilities of its kind the world over: Following the Dingolfing Plant, the Regensburg Plant is the BMW Group's second production facility to use powder clear paint technology particularly beneficial to the environment.

New assembly lines have been established or existing lines lengthened in all assembly areas, focusing in all cases on optimum ergonomic design of the workbays and job areas.

The Central Bodyshop focusing particularly on the doors and lids is close to the plant premises, supplying doors and lids to all BMW plants which build the 1 and 3 Series. Taking metal panels pre-formed at the Press Shop, the Central Bodyshop makes front and rear lids as well as doors in highly automated facilities.

**BMW Leipzig Plant.**
Starting in spring 2005, the new BMW 3 Series will also be built at BMW's new plant in Leipzig. Using flexible working time concepts, BMW's Leipzig Plant is able to build cars between 60 and 140 hours a week, responding very flexibly and quickly to specific demands and requirements in the market.
And being perfectly connected to the road network, the railways and the

airport, Leipzig is able to interact quickly and efficiently with the BMW Group's car plants in Bavaria.

Through its inherent structure, Leipzig has flexible options for expanding in all areas of production: The Bodyshop, Paintshop and Assembly are arranged around the Central Building like a kind of star offering growth options in several directions.

The Production Divisions in Leipzig are among the most advanced of their kind the world over, the Leipzig Paintshop using powder clear paint technology right from the start. The Assembly area, in turn, has a kind of "comb structure", a floor plan allowing direct transportation of supply parts to the production lines over the shortest possible distance.

To supply Assembly efficiently with pre-manufactured components and modules, suppliers pre-assemble their parts and components in a Supply Centre on the plant premises: Modules such as the seats or the complete cockpit are built up here in all variants required and with all special features in exactly the right sequence for subsequent production and are then transported to the assembly lines by means of automated conveyor technology.

**BMW Rosslyn Plant.**
BMW's Rosslyn Plant is about 30 kilometres north of Pretoria, the capital of South Africa. Opened by BMW in 1973 as a CKD (completely knocked down) plant, Rosslyn built all BMW model series only for the local market until 1996. After South African production was opened up for exports, production capacity was increased from 70 units a day in one shift to more than 200 units a day in two shifts, the current status in Rosslyn.

By 1997 the BMW Group had developed the Rosslyn Plant step-by-step into a fully fledged plant for the production of the BMW 3 Series Saloon, cars from Rosslyn going mainly to the USA, Japan and Sub-Saharan countries.

To prepare production of the new 3 Series in Rosslyn, a number of associates in South Africa moved to Germany for a period of almost three years. Cooperating closely with specialists in Development and Planning in Munich, they were able to acquire the know-how required for efficient processes from the start maintaining BMW's high standard of production quality.

**The BMW 3 Series in CKD production: developing the market in key regions of Asia.**

The BMW Group's strategy of internationalisation is reflected by a growing number of foreign sales subsidiaries and production plants. Despite increasing deregulation of global sales markets, however, access to markets in key regions such as South-East Asia is still obstructed today by trade barriers. Import duties on cars in Malaysia, for example, are up to 300 per cent.

For many years CKD (Completely Knocked Down) production has been a successful tool for developing these markets, above all in the case of premium cars. With import duties on parts and components generally being far lower than on completely built-up cars, local production ensures competitive prices

and allows larger sales figures. Hence, the BMW Group operates CKD production plants and joint ventures in car production in Thailand, Indonesia, Malaysia, Egypt, and Russia. And following the start of 3 Series production at the BMW Group's car production plants, the new model will also enter CKD production in these countries.