Planning routes with Overlapping Districts
THE BEST WAY FOR YOUR OPERATIONS
OVERLAPPING DISTRICTS – AN EXCELLENT PRAGMATIC SOLUTION FOR ROUTE PLANNING

Logistics and field service companies mostly rely on a route planning model using fixed districts or routes. While this creates a simple structure for all drivers’ or workers’ daily work, it also restricts companies and comes with a cost. Fixed districts allow drivers to always work in their known territories and there are almost no changes for dispatchers and customers. If you want to add more examples of why the drivers’ or service staffs’ knowledge is important for successful deliveries:

They know where to park, where the doorbells are, which people are willing to accept parcels for their neighbors. If packages are delivered to shops or offices, drivers might have keys for depositing packages at night.

However, daily alternating shipment volumes will always lead to imbalances between all tours in these fixed districts.

Workers, drivers, and dispatchers will face the challenges of differences in their personal working hours and the imbalances in the working times of their colleagues.

An employee might work 11 hours on one day and only 3 on another. Furthermore, one driver must drive to more addresses than her or his colleagues and will spend more miles on the road than necessary.

Greenplan found the optimal solution to battle these inefficiencies and imbalances of alternating working hours, different shipment volumes and differences in mileage per driver or technician.

By applying OVERLAPPING DISTRICTS, you and your operations profit from:

1. More flexibility
2. Improved volume-balancing
3. Optimal work time management
4. Less driven miles
5. Improved cost efficiencies
6. Less carbon emissions
OVERLAPPING DISTRICTS HELPED GREENPLAN TO WIN THE POSTEUROP INNOVATION AWARD

In 2020 PostEurop declared Greenplan and the concept of OVERLAPPING DISTRICTS with its underlying routing algorithm the winner of the PostEurop Innovation Award.

An award that underlines how important this innovative approach of route planning is for the future of logistics and field services.

Greenplan’s CEO - Dr. Clemens Beckmann - commented:

„We feel honored and grateful winning this year’s PostEurop Innovation Award. This recognition provides us with great motivation to further shape the future of delivery in logistics. Our vision was to develop a route optimization solution that can be easily integrated into existing systems and can reduce delivery costs and CO2 emissions. Greenplan is not just a theoretical construct but a globally applicable solution for a broad range of customers.“

The award showcases the great achievement of OVERLAPPING DISTRICTS. A concept that tackles one of the biggest issues in route planning.

With fixed or static districts one might think that all vehicles are always fully loaded and, thus, do not waste any volume or fuel.

However, assuming that there are 800 parcels and a company owns four vehicles that can carry 200 parcels, one can assume that all cars can be loaded evenly and at their full capacity. But as soon as the shipment number increases to, e.g. 900 parcels, there needs to be a fifth vehicle that carries the remaining 100 parcels and, therefore, is only loaded at half-capacity, wasting fuel and creating costs.

Read on to learn how Greenplan’s OVERLAPPING DISTRICTS overcome this issue and can help you to improve your business.
EXPLAINED

HOW DO OVERLAPPING DISTRICTS WORK?

To understand the innovative concept of OVERLAPPING DISTRICTS, one needs to understand the concept of fixed districts in logistics.

When working with fixed districts, a region, e.g., a city, is divided into districts according to postal codes, geographical peculiarities, or long-grown manual decisions. Allocated to these districts are drivers who, during their daily work, will always operate in “their” districts.

Here one can see these fixed districts in green, blue, yellow and violet. Each district contains one exemplary tour of differing lengths and amounts of stops.

While the fixed districts are advantageous because the drivers or technicians will (get to) know “their” districts and clients will get used to these drivers, the fixed tours bring several disadvantages and risks for a companies’ operations:

As the tours in fixed districts usually remain the same despite daily alternating shipment volumes, the driver or technician in the green zone might have to make 15 stops on Monday but only 4 stops on Tuesday, while his colleague in the violet district must make 16 stops on Monday and 23 on Tuesday.

Fixed districts might appear organized and well-structured but they come with critical costly disadvantages, such as wasted fuel, unnecessary time on the road or alternating working hours.
This bears two problems:

**Problem 1:** The drivers or service staff employees stay true to their usual routes but drive unnecessary miles and therefore burn more fuel and, hence, money and CO2.

**Problem 2:** The drivers or technicians face alternating working hours on every single day. Thus, they might need to work overtime above the legal regulations and also might work less than they should or will not be able to deliver all parcels.

Avoiding these costly disadvantages should be a priority to improve all operations and therefore profit from cost-efficiencies and happier, less exhausted drivers.

"**OVERLAPPING DISTRICTS** are the solution to these two problems!"

**THE SOLUTION**

**THE BEST OF BOTH WORLDS**

Naturally, one would think that the perfect solution for avoiding these critical and costly disadvantages of fixed districts is the total abolishment of districts. This is what we call dynamic planning.

From an algorithmic point of view, ignoring the practical issues mentioned above, fully dynamic planning results in the most optimal planning. However, many existing companies are cautious when trying to implement the idea of non-fixed districts to their operations.

For many companies it is difficult to implement a new concept or infrastructure into their daily operations as drastic changes often face resistance by employees.

Furthermore, implementation changes processes, IT systems and other parts of a running organization.

But with **OVERLAPPING DISTRICTS**, Greenplan has developed a solution that can be easily implemented. Nevertheless, the advantages of fully dynamic tours cannot be denied:

1. **Better balancing of volumes across all tours**
2. **Optimal tour structure based on actual daily shipments**
3. **Optimal consideration of defined optimization targets (e.g. costs, CO2)**
4. **Reduction in the number of tours**

However, while Greenplan offers this optimal solution, some companies prefer a solution that combines the best of both worlds: fixed districts and dynamic tour planning.

This is what **OVERLAPPING DISTRICTS** are and where Greenplan comes into play to optimize your route planning while you simultaneously stay true to your internal structures and processes.
OVERLAPPING DISTRICTS realize an excellent compromise between fixed districts and no districts as it enables companies to benefit from low handling times, which tend to be an advantage of fixed districts, and the benefit of balanced tours of dynamic tour planning.

While fixed districts have clear borders between the different delivery regions and dynamic tour planning completely abandons these borders, OVERLAPPING DISTRICTS expand the borders.

By expanding the borders and having them overlap into the neighboring districts, a powerful effect is created which you can see here:

The green district overlaps into the neighboring yellow and violet districts which then leads to the inclusion of two stops of the violet district and one stop of the yellow district.

As the driver or technician of the green district must make stops in proximity to the violet and yellow stops, he or she can now also drive to those which usually have not been part of „his“ fixed district.

This is advantageous for the three employees of said areas as they profit from more balanced tours and more balanced working hours, reducing overtime or deficit hours to a minimum. Furthermore, the business profits as total driving time and driven miles are reduced, leading to less costs, less time on the road and fewer CO2 emissions.
IN total, OVERLAPPING DISTRICTS come with five important advantages for companies from a variety of industries, such as logistics, postal operators, facility management, field services and more.

**Gain flexibility in your deliveries or field service jobs**

Flexibility is the key to success for always fulfilling all service jobs or deliveries of each day. Especially, when the locations change continuously.

While a fixed district can lead to 10 jobs on a Monday, there could be 17 jobs on a Tuesday which possibly results in not being able to complete a certain number of jobs of the day – which is costly and does not satisfy clients and workers.

By using OVERLAPPING DISTRICTS, the drivers’ or technicians’ daily jobs can be better distributed between all of them as jobs can be performed by a driver or technician from a neighboring district. Thus, less shipments and jobs will be dropped, and your operations will benefit from satisfied customers.

**Improve your time management and your workers’ satisfaction**

Overtime hours or deficit hours are one of the driving factors that lead to unsatisfied workers. One of the driving factors of overtime hours or deficit hours in logistics are fixed districts.

Due to the (oftentimes) daily change of the number of jobs, drivers suffer from irregular working hours throughout the week, leading to dissatisfaction. Further, they might notice that drivers in other districts have more desirable working hours, making them feel unfairly treated.

This is where OVERLAPPING DISTRICTS and its semi-dynamic tours come in handy. By creating tours which are a combination of two or even more districts, the daily and weekly workload is evenly balanced among all drivers or technicians.

Furthermore, your dispatchers can plan the drivers’ or service staff’s working hours more efficiently and in compliance with the legal conditions for working hours. This way you can prevent legal affairs and unsatisfying working hours.

**Profit from excellent handling and driving times**

OVERLAPPING DISTRICTS are an excellent compromise of low handling times and shorter driving times.

As your drivers or service staff will continue to work mostly in their known districts, your operations will still profit from the drivers’ knowledge of “their” districts. Resulting in short handling times for each job, delivery, or pick-up.
Additionally, your employees will profit from optimal driving times and, therefore, complete all jobs on time.

A powerful combination which is only possible thanks to OVERLAPPING DISTRICTS. This results in better cost-efficiencies and less CO2 emissions.

4 No disruption of existing processes

Change often comes with resistance and disruption of already existing processes and workflows. An issue that can prevent businesses from improving because these changes would bring too many problems.

However, the implementation of OVERLAPPING DISTRICTS into your existing operations comes with a minimum of changes to your drivers’ and dispatchers’ routines.

Usually, 80 to 90 percent of stops on a driver’s or technician’s route stay the same after implementation and only 20 to 10 percent change. A “disruption” that is easy and feasible for your employees.

5 Transition from overlapping districts to no districts at any time

The best aspect about OVERLAPPING DISTRICTS is that it allows a comfortable and gradual transition towards fully dynamic tours.

Instead of changing and disrupting your entire logistical infrastructure, OVERLAPPING DISTRICTS will be easily digested by your colleagues.

Drivers and technicians can still operate in “their” districts, dispatchers can still work with the resources they are used to and simultaneously benefit from all the advantages of OVERLAPPING DISTRICTS. This is how OVERLAPPING DISTRICTS result in satisfied workers and better results in all aspects of your business’ operations.

Whenever you feel that your business is ready to transition towards fully dynamic tours, you can either enlarge the overlap between the districts so that, eventually, there is only one big district left (no districts) or implement fully dynamic tours with the help of Greenplan and profit from:

- Better balancing of volumes across all tours
- Optimal tour structure based on actual daily shipments instead of averages
- Optimal consideration of defined optimization targets (e.g. costs, CO2)
- Reduction in the number of tours
Using **OVERLAPPING DISTRICTS** is one of Greenplan’s unique specialties and can lead to significant improvements for every party. One of our clients had to deliver nearly 780,000 shipments in two months. To do so they were operating 122 vehicles which were allocated to fixed districts. This resulted in nearly 14,000 deliveries per day and nearly 115 per daily tour.

By comparing the routes of the client’s fixed districts to the routes that would be used after applying **OVERLAPPING DISTRICTS**, significant improvements were immediately noticeable:

An overlap of only 50 meters per district resulted in more balanced shipments per tour and an improved balance of working hours while maintaining the level of delivered shipments per day.

This resulted in a reduction of each driver’s working hours from about 4 and a half hours (273 minutes) to only 4 hours (243 minutes) per driver per day – a reduction of 11%.

Additionally, the amount of total driven kilometers was reduced by 10 % per week, increasing the efficiency per tour and cutting costs for fuel by 10 %. Therefore, this client profits from...

... less driven kilometers per week!
... less CO2 emissions!
... fewer working hours for its drivers!
... less costs for fuel and employees!
... less stressed and unsatisfied drivers!

Get in touch now to learn more about how we can help you and your operations by implementing **OVERLAPPING DISTRICTS**.

Greenplan’s Overlapping Districts are the boost for your operations

Working with **OVERLAPPING DISTRICTS** could be the solution for the improvement of your company’s operations. Want to learn more about Greenplan and how you can improve your operations?

Our route planning experts would gladly be of assistance. Feel free to visit [www.greenplan.de/en-us](http://www.greenplan.de/en-us) or contact us at contact@greenplan.de