



INTRO

# Dynamic Scheduling in Health

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Achieving Scheduling Excellence in the  
Health & Social Care Industry





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## What is scheduling?

As healthcare organisations' workforces grow, and their physical locations are spread wider, business operations and processes rely more on automated systems to create and update their schedules.

Offering patients a reliable, efficient service is crucial as healthcare professionals are dealing with patients' lives. Today, technology solutions are ever-evolving and with the emergence of automated intelligence for greater insights, it is therefore important for healthcare organisations to have flexible scheduling solutions in place. Scheduling software helps healthcare organisations to create a paperless environment, meet patients' appointments, whilst improving the capacity of your field-based health workers. Firstly, we must identify what scheduling is and how it is beneficial to the health and social care industry.

Scheduling is the process of arranging, controlling and assigning work and workloads. In relation to mobile working, scheduling involves managing your health workforce and their workloads, planning their daily visits and activities whilst dealing with other operational requirements of the job such as annual leave and sickness. It is essential to any business as without it, planners are manually inputting information and re-arranging schedules

which can be a time-consuming and difficult process. Planning schedules also has to be completed whilst dealing with the day to day complexities including changes to schedules and appointment delays, as well as dealing with particularly large workforces carrying out complex, variable work.

Dynamic scheduling, as its name implies, is a method in which the software determines which instructions to execute, as opposed to a statically scheduled machine, in which the compiler determines the order of execution. The solution works with the scheduler to make intelligent decisions based on the business objectives and requirements of the day. It allows easy access to live job information and changes as and when they take place available in real-time.

# Scheduling in health

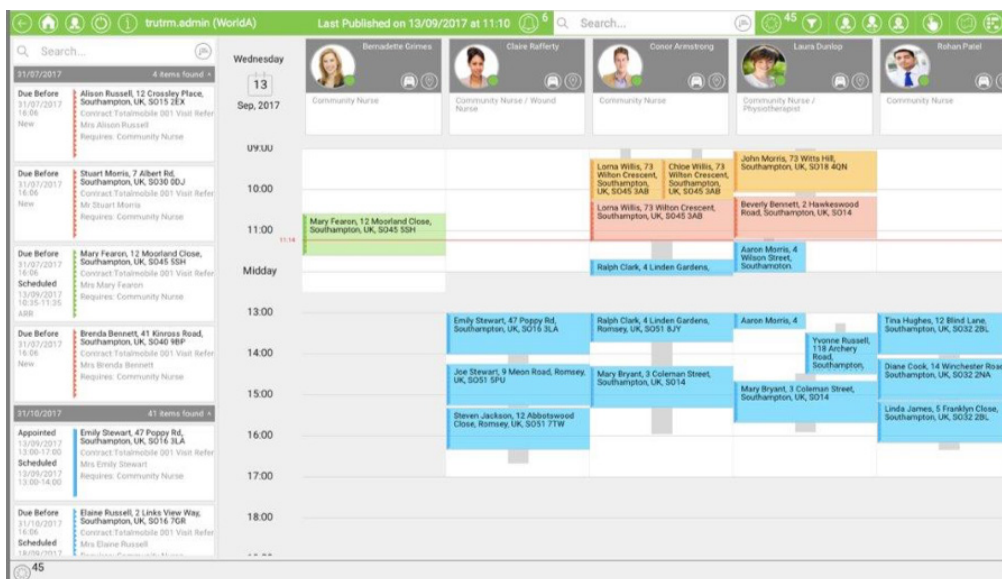
So, how is dynamic scheduling relevant to health? Each business has different needs and criteria in relation to their approach to scheduling.

In the health and social care sector, health organisations will want to focus on staff delivering a consistent continuity of care or double handed visits, whereas other industries such as facilities management, is likely to have a larger focus on achieving cost efficiencies.

Scheduling is beneficial to healthcare organisations with community or field-based staff, allowing them to deliver an improved patient centric experience. Implementing a scheduling solution can help drive efficiencies enabling your workforce to complete more jobs in a day. It also creates visibility as to what's going on throughout the day and that visibility could be vital to your healthcare organisation. For example, if you're a planner scheduling visits for a homecare organisation and you notice your not receiving any feedback via the schedule to notify that the work's been completed, then this would enable the

planner to react sooner in order to prevent the service user becoming high risk. With dynamic scheduling however, it helps ensure a consistent continuity of care service as the same worker can be scheduled to visit the same patient or customer each time.

A good scheduling system reduces the wait for patients to be seen to but also utilises the most suitable resource to the appointment. Scheduling systems are essential for healthcare professionals as patients may need to be seen urgently to receive emergency medical treatment or care. Healthcare organisations can use scheduling systems for various methods such as capacity planning, patient appointments and workforce scheduling. In workforce scheduling, the challenge is ensuring that staffing levels track needs, as predicted from patient requirements.



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# Real World, Right Schedule

We enable organisations to solve complex real-world scheduling challenges by providing staff with schedules that adapt to the changing day and are consistently efficient. How do we do this? With our dynamic scheduling solution and our AI assistant, Mendel. Together they provide expert scheduling which takes on board

a wide range of considerations, such as skills required, availability and time frames to ensure successful delivery.

But how does our dynamic scheduling solution benefit your healthcare organisation?

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## Business benefits of our dynamic scheduling solution

### **More time to do the work that matters** –

With dynamic scheduling, healthcare professionals can spend more time delivering a quality service. Scheduling reduces the need to use paper schedules and lengthy manual processes as well as reduces the time for community nurses or health mobile staff to travel back and forth to the office.

### **More jobs completed per day** –

Providing mobile health workers such as community nurses with an automated schedule, fully visible and available before their day begins, along with structured routing travel plans, ensures an efficient service and the healthcare professional can get straight to work. As well as reducing unnecessary trips back and forth to the office, staff can attend more patient appointments while out in the community.

### **Reduce Co2 emission and fuel costs** –

With our dynamic scheduling solution and its routing capabilities, it is easy to save costs by ensuring the routes to jobs are optimised, reducing how far healthcare professionals have to travel and eliminating unnecessary

trips to the office. Less time travelling means reduced fuels costs and Co2 emissions.

### **Achieve and exceed your SLA's** –

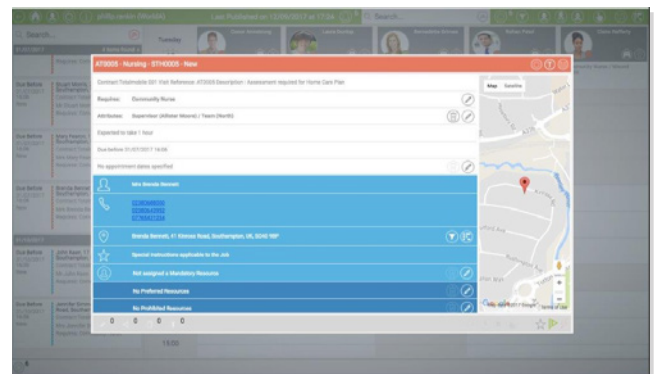
Dynamic scheduling speeds up the process of health visits and patient appointments being completed on time; an efficient workforce therefore allows you to meet those all-important SLA targets whilst meeting the demands of your patients.

### **Meet real world issues head on** –

Changes can occur in schedules which can disrupt the overall schedule plan such as staff absences and changing preferences. Our dynamic scheduling solution reacts to these changes as and when they occur, adjusting and reevaluating the schedule, to assess where changes need to be made based on priority level and business objectives.

### **Increased productivity** –

By giving your community nurses and social care workers the freedom to work at the point of care or on the move, you are increasing productivity and capacity within your healthcare organisation.





# Say hello to Mendel

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## Mendel

Using genetic algorithms and our own unique artificial intelligent engine Mendel, our dynamic scheduling solution identifies ways to make the best use of time and resources to solve and maximise the most difficult scheduling issues.

It allows you to define preferences for jobs before you send them to the job list and Mendel schedules them. Constraints include multiple resource jobs, preferred resource, prohibited resource, projects and job dependencies and automatic appointment booking.

Appointment slots are displayed based on capacity/availability varying from no availability to low, medium and high. Similarly, visits are also colour coded to represent the visit state varying from not started, overdue, at risk, started, overrun to complete.

Both schedulers and their mobile health workforce can view their schedule in various view options whether it is day, week or month. This allows the worker to know what visits they have planned in advance. The mobile health worker can also benefit from a map feature to view current locations of resources and job locations as well as planned routes and directions. Our dynamic scheduling solution integrates with Google API for travel information with modes of travel including driving and walking. Healthcare mobile workers can record unavailability such as sickness or annual leave on their mobile application or alternatively this can be completed by their managers.

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# Key features:

Automated scheduling features will vary per provider, however with Totalmobile, our dynamic scheduling solution has various key features including scheduling, multiple scheduling options, worlds, scheduling dashboards and maps.

## **Scheduling** –

Our clever scheduling solution provides a rich graphical means for your healthcare organisation to allocate, reallocate and recall work in the diaries of your healthcare workforce. It provides a complete view of the current status of staff diaries with live colour-coded feedback from user devices, including when work has started, is completed, is overrunning or scheduled to start late.

## **Multiple scheduling options** –

Mendel provides a range of levels of schedule management, it can be used fully dynamic, allowing Mendel full automation control, perfect for larger deployments. For those who want to maintain some control, there is the Intelligent Assistant which allows you to override any decision from Mendel and for smaller deployments you can decide to take full manual control. Finally, Mendel On-Demand offers all the flexibility of the Cloud and its ability to auto scale to processing peaks. It can be seamlessly bridged to your existing Totalmobile infrastructure or as an add-on to our Optimise SaaS service.

## **Worlds** –

A “World” is a self-contained scheduling solution. It can represent an entire health organisation or a department within your organisation. The use of Worlds means that you can apply different scheduling objectives and constraints to different parts of your healthcare organisation. You can also loan resources between worlds where extra capacity can be used by those departments or teams that are currently under resourced.

## **Scheduling dashboard** –

Our interactive dashboard provides real time indication of the overall status of the organisation schedule, informing the person managing the schedules of the current utilisation of the overall workforce and individual resources. It also highlights the level of supply and demand for specific skills, allowing transformative business decisions to be made.

## **Maps** –

The map view indicates the locations of work and resources as pins, presenting a creative view of the ‘World,’ and assisting your healthcare staff in visualising the scheduling solution at any point in time. In-depth details are highlighted when a resource is selected, providing a view of the planned work and optimum travel route for that resource.

trutm.admin (WorldA) Last Published on 12/09/2017 at 17:24

Search...

Wednesday 13 Sep, 2017

4 items found

- Due Before** 31/07/2017 16:06  
Alison Russell, 12 Crossley Place, Southampton, UK, SO15 2EX  
Contract: Totalmobile 001 Visit Refer  
Mrs Alison Russell  
Requires: Community Nurse
- Due Before** 31/07/2017 16:06  
Stuart Morris, 7 Albert Rd, Southampton, UK, SO30 0DJ  
Contract: Totalmobile 001 Visit Refer  
Mr Stuart Morris  
Requires: Community Nurse
- Due Before** 31/07/2017 16:06  
Mary Fearon, 12 Moorland Close, Southampton, UK, SO45 5SH  
Contract: Totalmobile 001 Visit Refer  
Mrs Mary Fearon  
Requires: Community Nurse
- Due Before** 31/07/2017 16:06  
Brenda Bennett, 41 Kinross Road, Southampton, UK, SO40 9BP  
Contract: Totalmobile 001 Visit Refer  
Mrs Brenda Bennett  
Requires: Community Nurse

40 items found

- Due Before** 31/10/2017 16:06  
Elaine Russell, 2 Links View Way, Southampton, UK, SO16 7GR  
Contract: Totalmobile 001 Visit Refer  
Mrs Elaine Russell  
Requires: Community Nurse
- Scheduled** 15/09/2017 09:14-12:14  
New
- Due Before** 31/10/2017 16:06  
Alan Morris, 1A Chapel Rd, Southampton, UK, SO30 3FE  
Contract: Totalmobile 001 Visit Refer  
Mr Alan Morris  
Requires: Community Nurse
- Scheduled** 13/09/2017 09:09-12:09  
New

trutm.admin (WorldA) Last Published on 13/09/2017 at 11:10

Search...

Wednesday 13 Sep, 2017

4 items found

- Due Before** 31/07/2017 16:06  
Alison Russell, 12 Crossley Place, Southampton, UK, SO15 2EX  
Contract: Totalmobile 001 Visit Refer  
Mrs Alison Russell  
Requires: Community Nurse
- Due Before** 31/07/2017 16:06  
Stuart Morris, 7 Albert Rd, Southampton, UK, SO30 0DJ  
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Contract: Totalmobile 001 Visit Refer  
Mrs Mary Fearon  
Requires: Community Nurse
- Due Before** 31/10/2017 16:06  
Brenda Bennett, 41 Kinross Road, Southampton, UK, SO40 9BP  
Contract: Totalmobile 001 Visit Refer  
Mrs Brenda Bennett  
Requires: Community Nurse

41 items found

- Appointed** 13/09/2017 13:00-17:00  
Emily Stewart, 47 Poppy Rd, Southampton, UK, SO16 3LA  
Contract: Totalmobile 001 Visit Refer  
Mrs Emily Stewart  
Requires: Community Nurse
- Scheduled** 13/09/2017 13:00-14:00  
New
- Due Before** 31/10/2017 16:06  
Elaine Russell, 2 Links View Way, Southampton, UK, SO16 7GR  
Contract: Totalmobile 001 Visit Refer  
Mrs Elaine Russell  
Requires: Community Nurse

Allocated To

Name	Payroll Number	Roster Type	Skill	Supervisor	Team
Lorna Willis, 71 Wilton Crescent, Southampton, UK, SO45 3AB					East
Chloe Willis, 73 Wilton Crescent, Southampton, UK, SO45 3AB					North
John Morris, 73 Southampton, UK					South
Beverly Bennett, Road, Southamp					TEAM
Aaron Morris, 4 Wilson Street, Southampton, UK					TMTeam
Ralph Clark, 4 Linden Gardens, Romsey, UK, SO51 8JF					TEAM
Aaron Morris, 4 Wilson Street, Southampton, UK					TMTeam
Emily Stewart, 47 Poppy Rd, Southampton, UK, SO16 3LA					TEAM
Ralph Clark, 4 Linden Gardens, Romsey, UK, SO51 8JF					TMTeam
Aaron Morris, 4 Wilson Street, Southampton, UK					TEAM
Joe Stewart, 9 Meon Road, Romsey, UK, SO51 5PU					TMTeam
Mary Bryant, 3 Coleman Street, Southampton, UK, SO14					TEAM
Mary Bryant, 3 C Southampton, UK					TMTeam
Steven Jackson, 12 Abbotswood Close, Romsey, UK, SO51 7TW					TEAM

Operational/Analysis Dashboard

Avg Time per Job (08/09/2017 - 09/07/2017)

North Team - Avg Time Per Job (08/09/2017 - 09/07/2017)

Average Visits Completed Per Hour (08/09/2017 - 09/07/2017)

Late Visits (08/09/2017 - 09/07/2017)

North Team Late Visits (08/09/2017 - 09/07/2017)

Total Client Fasting Time (08/09/2017 - 09/07/2017)

Total Client Fasting Time (08/09/2017 - 09/07/2017)

Average Client Fasting Time Per Visit (08/09/2017 - 09/07/2017)

Average Visits Completed Per Hour (08/09/2017 - 09/07/2017)

Late Visits (08/09/2017 - 09/07/2017)

Total Client Fasting Time (08/09/2017 - 09/07/2017)

Capacity vs Demand (08/09/2017 - 09/07/2017)



Mobile working use case:

## A Day in the Life of a Scheduler and a Mobile Community Nurse Worker:

Exploring how mobile workforce management improves processes and communication between schedulers and mobile health workers; enabling them to respond to changes throughout the day with minimal disruption and maintaining a high standard of service.

### **8:30am**

At the start of the working day, the scheduler assesses the workload for the day ahead and the mobile staff they have available. They prioritise these needs with their company objectives and the targets they are aligned to, depending on the organisation these can range from maximising jobs per day, continuity in service delivery or reducing travel costs.

### **09.00am**

Through the dynamic scheduling solution, the schedule is automatically created in-line with company objectives and the requirements of the day ahead, whilst ensuring that the right skills are assigned to the right job.

*The community nurse receives their schedule of work, by effectively scheduling travel between jobs is optimised, reducing wasted journeys to sites where they have no entry or no attendance issues, therefore they are already operating more efficiently.*



### **11:00am**

A common issue many healthcare organisations face are sudden changes within the working day that will affect the schedule, these need to be responded to and implemented into the schedule quickly to ensure the organisation maintains a high level of service while continuing to meet patient's needs. In this instance, a community nurse is running over her appointment with her current patient and is going to be late for the next scheduled appointment.

### **11:30am**

Rather than having to manually re-evaluate the whole schedule, the scheduler can change the resource availability and allow the solution to automatically adjust to the new information; it reprioritises and reschedules the work whilst maintaining core objectives. Once the scheduler is happy, this new schedule is communicated directly to the mobile worker without having to make lots of calls - interrupting service delivery.

*The health worker receives an updated schedule to reflect changes made due to a member of staff running late. Their day has been adjusted with minimal disruption and they are able to continue on to their next visit.*

### **2:00pm**

As the day continues, the schedule is proceeding as planned with visits being completed on time, until an unfortunate traffic jam causes a community nurse to be delayed, they're now running late for their next visit. They contact their scheduler to make them aware. The scheduler back in the office is made aware of the traffic issue both from the call by the mobile worker but also through the scheduling solution, they can see that the health worker is stuck and not where they are expected to be. They can then decide whether to reschedule the visit, contacting the service user to inform them or reassign the job to another member of staff.

### **2:30pm**

The scheduler is able to see another community nurse near the affected service user's location and they have upcoming availability. The scheduler decides to manually assign the job to them, sending an updated schedule.

*The health worker stuck in traffic is notified that the job has been reassigned easing their pressure and allowing them to continue onto their next job. The re-assigned job is received by the other mobile worker, who accepts and continues with their day. The main benefit being that the service user receives a high standard of service, one that is on time and efficient.*

## CASE STUDY

# Fife Council Health and Social Care Partnership



Fife Council's Health and Social Care Partnership is responsible for arranging social care services for people and communities in Fife.

Every day, the service makes a real difference to people's lives at times of personal or family need.

Implementing mobile technology has been a major focus for Fife Council, to ensure that they are able to continue to support people at home with the highest quality of care. As a result of this need, they deployed solutions from Totalmobile, including mobile workforce management and dynamic scheduling to approximately **900** home carers, across **31** local patches, covering all of Fife.

Fife Council recognised that by investing in mobile technology and dynamic scheduling from Totalmobile's WorkNow platform, they could transform the way they balance supply/demand and respond to changes.

### **Totalmobile's solutions have helped them to:**

- Work more locally and in a more co-ordinated way;
- Improve consistency of service for service users, regardless of location across Fife;
- Manage last minute cancelled appointments (often due to nature of the work) through real time co-ordination and response;
- Respond to re-scheduled visits live whether by car or on foot;
- Monitor real time performance using clear visual data;
- Reduce unnecessary mileage/ fuel costs/time spent travelling across vast geographies;
- Report on operational performance
- Handle **22,000** visits per week on average through Totalmobile's dynamic scheduling system
- Totalmobile deployed solutions to **900** home carers, across **31** patches, covering all of Fife

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Totalmobile will help you release the potential in your mobile workforce. Our 'mobile worker first' approach to innovation results in solutions people love to use.

Our customers are seeing significant increases in workforce capacity and cost savings, while also ensuring compliance and driving levels of service consistency. We will transform how your organisations works and help your people do more of the work that really matters.

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