

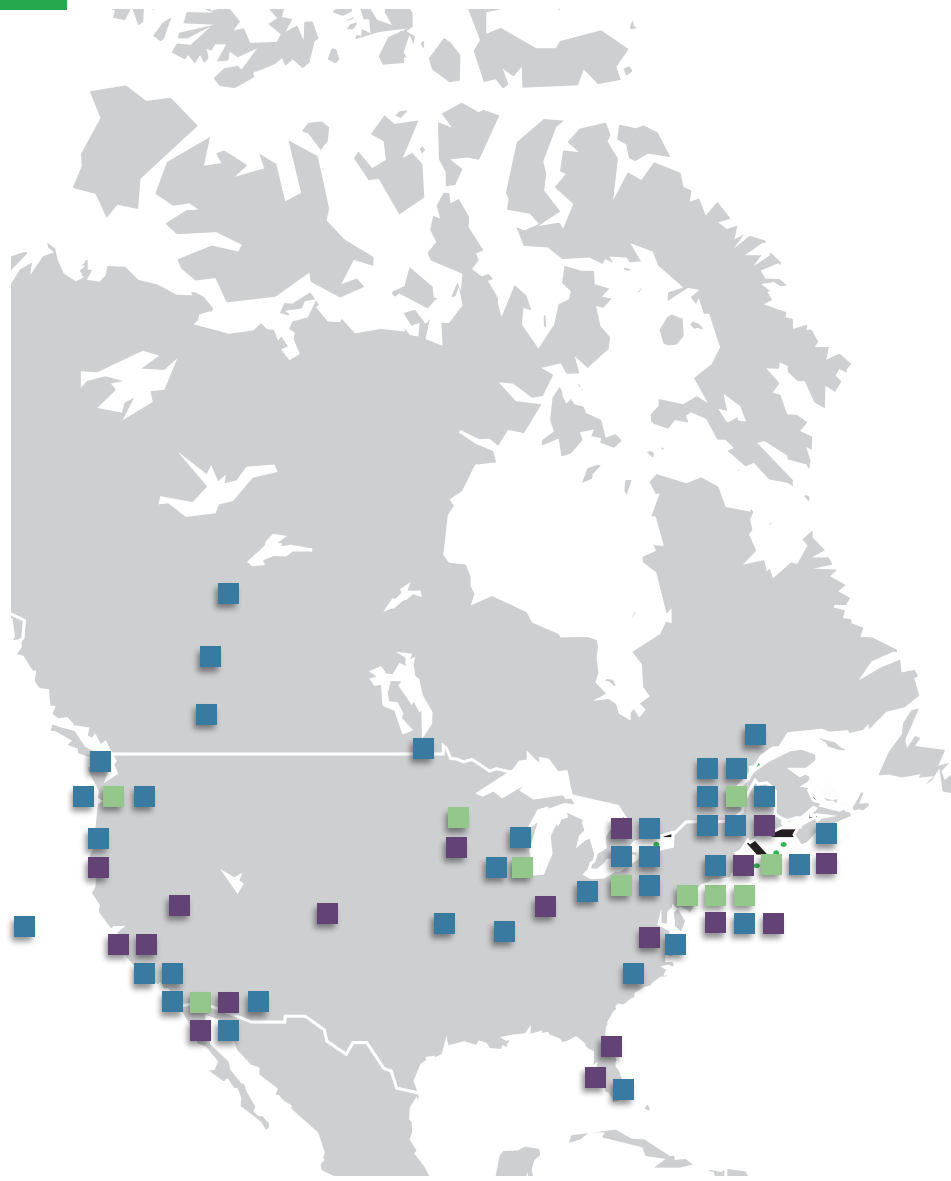


Use data and optimization tools to plan high-quality service, factoring in network maintenance

Alexandre Savard, PMP – Senior Manager, Rail
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GIRO at a glance

GIRO



Founded in 1979

Based in Montréal, Canada

>400 specialists in N. America

Specialized in large and complex operations

HASTUS-Rail: integrated solution for planning and managing passenger-rail operations

>20 commuter rail projects worldwide

USA: Denver, Boston, New York, Seattle

Context

Heavy works, heavy challenges

Rail plays a key role in urban mobility

Infrastructure works are expensive and time-sensitive

High impact on passengers



Operators' challenges

Operators' challenges



Plan service around constraints of works

Maintain highest possible service quality

Mitigate impacts of works on travelers

Ensure best usage of resources

It's all related!

Service demand

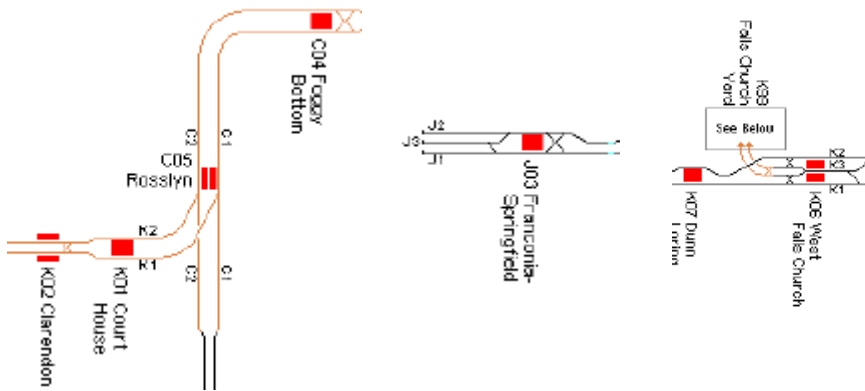
Rail Hours					
Day	Time				
Monday - Friday	5 am - 12 am				
Saturday & Sunday	7 am - 12 am				

MONDAY - FRIDAY					
Rail Lines	AM Rush 5am - 9:30am	Midday 9:30am - 3pm	PM Rush 3pm - 7pm	Evening 7pm - 9:30pm	Late Night 9:30pm - close
RD	3 - 6 mins*	12 mins	3 - 6 mins*	6 - 10 mins	15 - 18 mins
OR SV YL GR	6 mins	12 mins	6 mins	12 mins	20 mins
BL	12 mins	12 mins	12 mins	12 mins	20 mins

Rolling stock and employees



Adapted timetables
minimizing
resources



Infrastructure constraints



Track works

Key strategies to tackle challenges around works

Define the network constraints

Set date interval for schedule of works

Define temporary circulation restrictions on track segment

Set capacity constraints at stations

Search Options

From: 01/01/2015 To: 01/01/2016

Municipality:

Route:

☒ Show effective ☒ Show not effective

Additional Filter:

6 Sep - 12 Sep

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
06	07	08	09	10	11	12
CIRCULAR-234				CIRCULAR-567		

Track Segment Details

id: GIRO6590227320120704140219 Side: Right

GI MAIN Municipality: DemoRail

relative areas:

Intersection

Origin: JCT

Destination: JCT

Characteristics

	Extremity	Period	Metro	Tramw...	Train 1	Train 2	Train 3
den access		CIRCULAR-1...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

ncv01 - Manage Network Constraint Versions

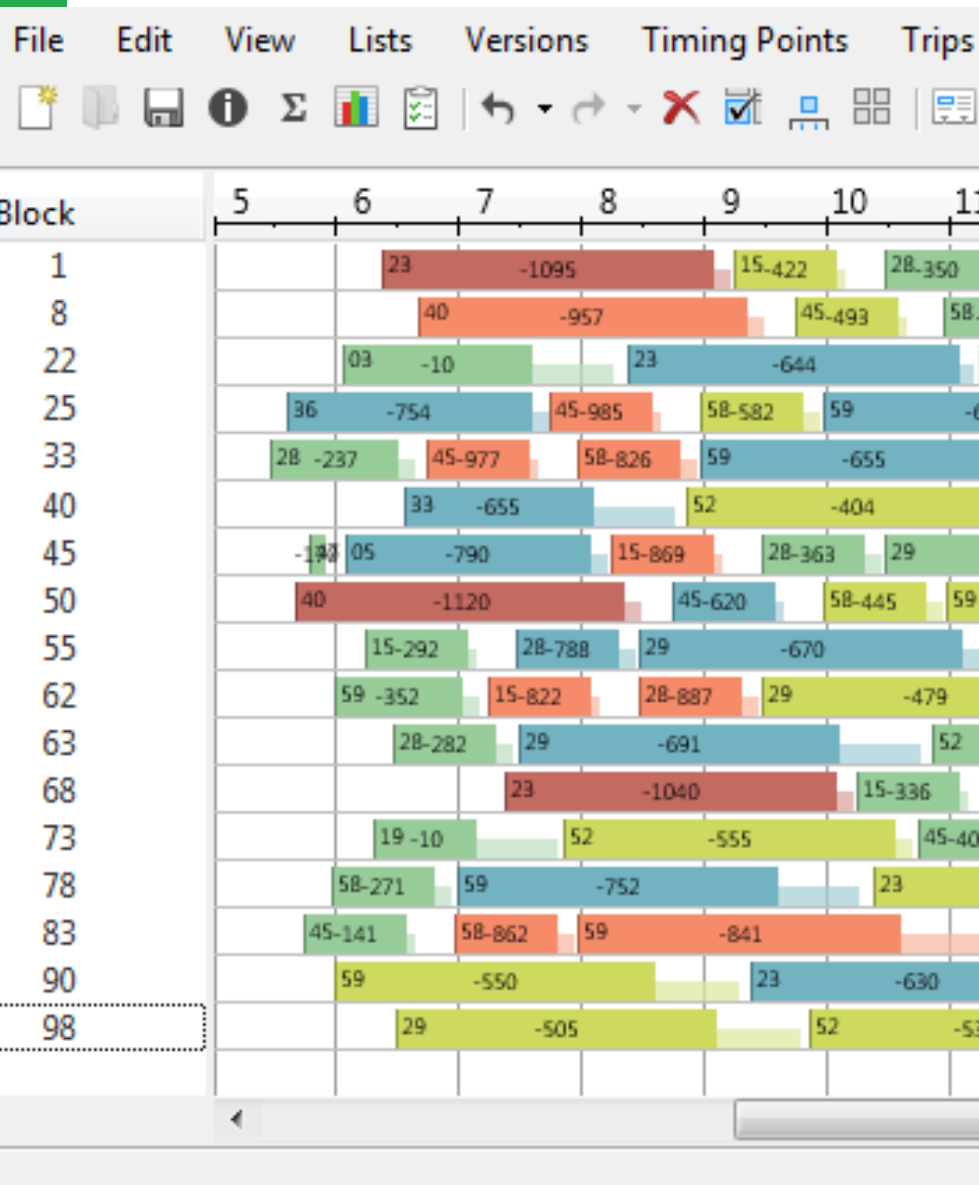
File

Version: RAILINFRA

Place Capacities

Place	Start	End	M...	Tue	Wed	Thu	Fri	Sat	Sun	VehCount	V
			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	
JR			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0	

Adjust the capacity based on demand



Input demand per trip
or at stations

Set capacity of trains
and consists

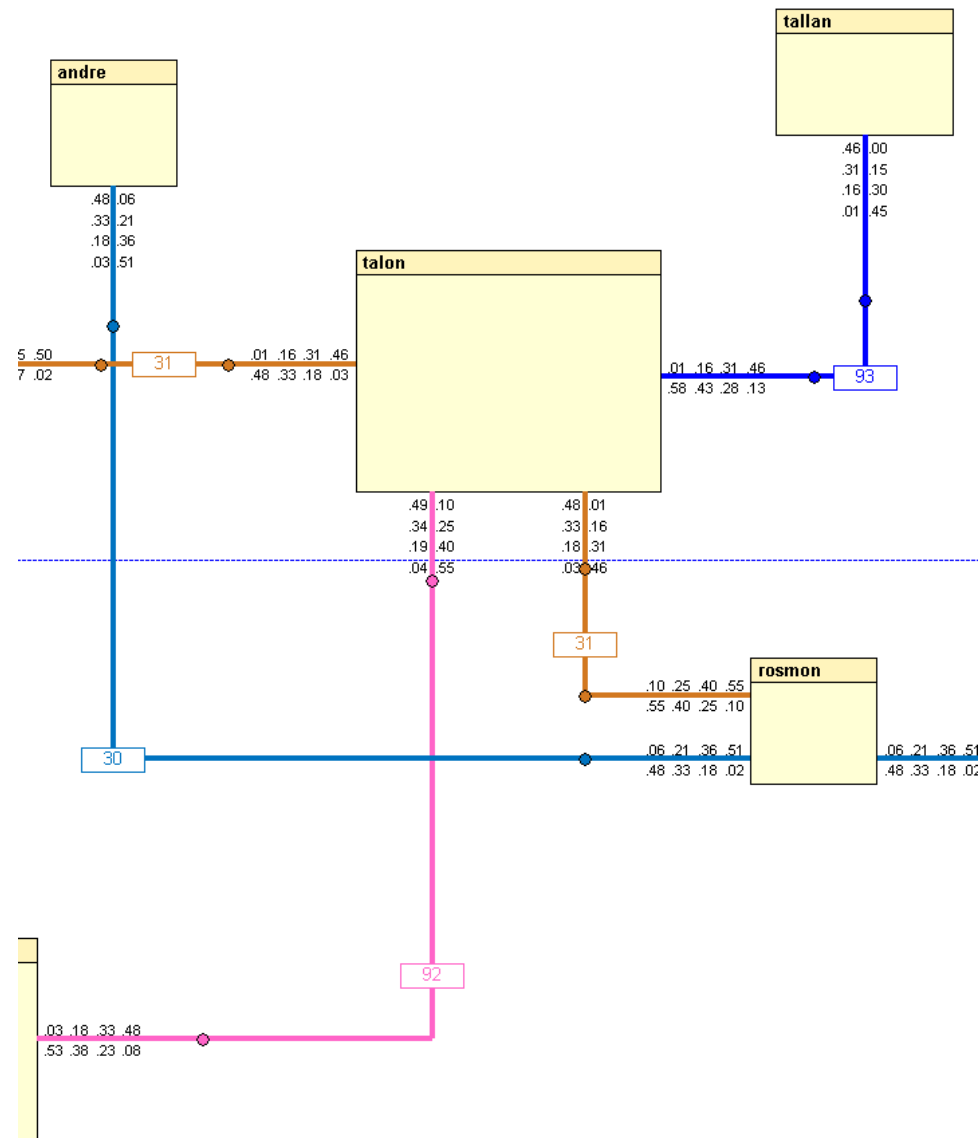
Identify overloaded
trips or periods

Plan for alternative services

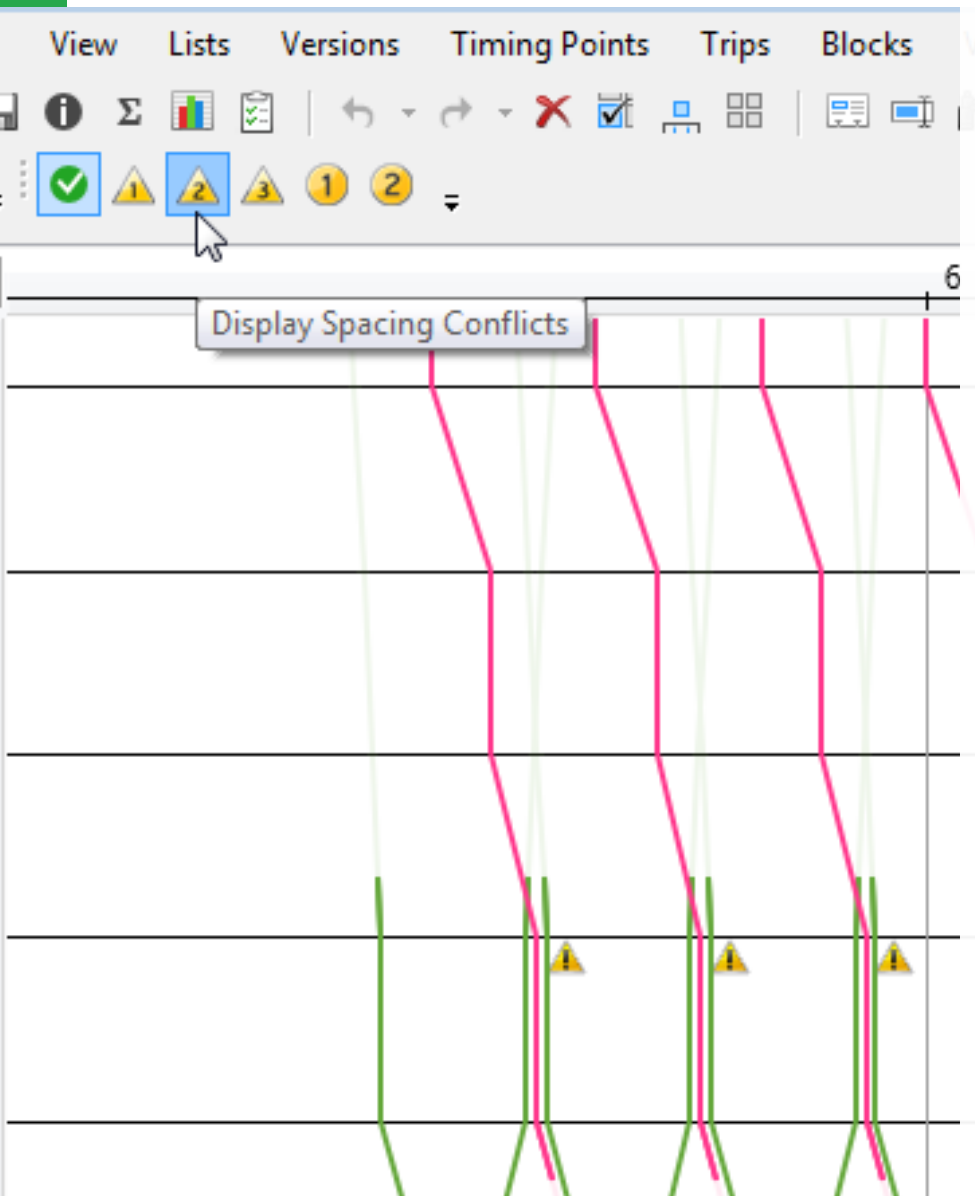
Use buses to make up for reduced/cancelled train services

Define appropriate frequency, service level and required vehicles

Synchronize bus and train trips



(Re)generate train timetables



Automatically consider

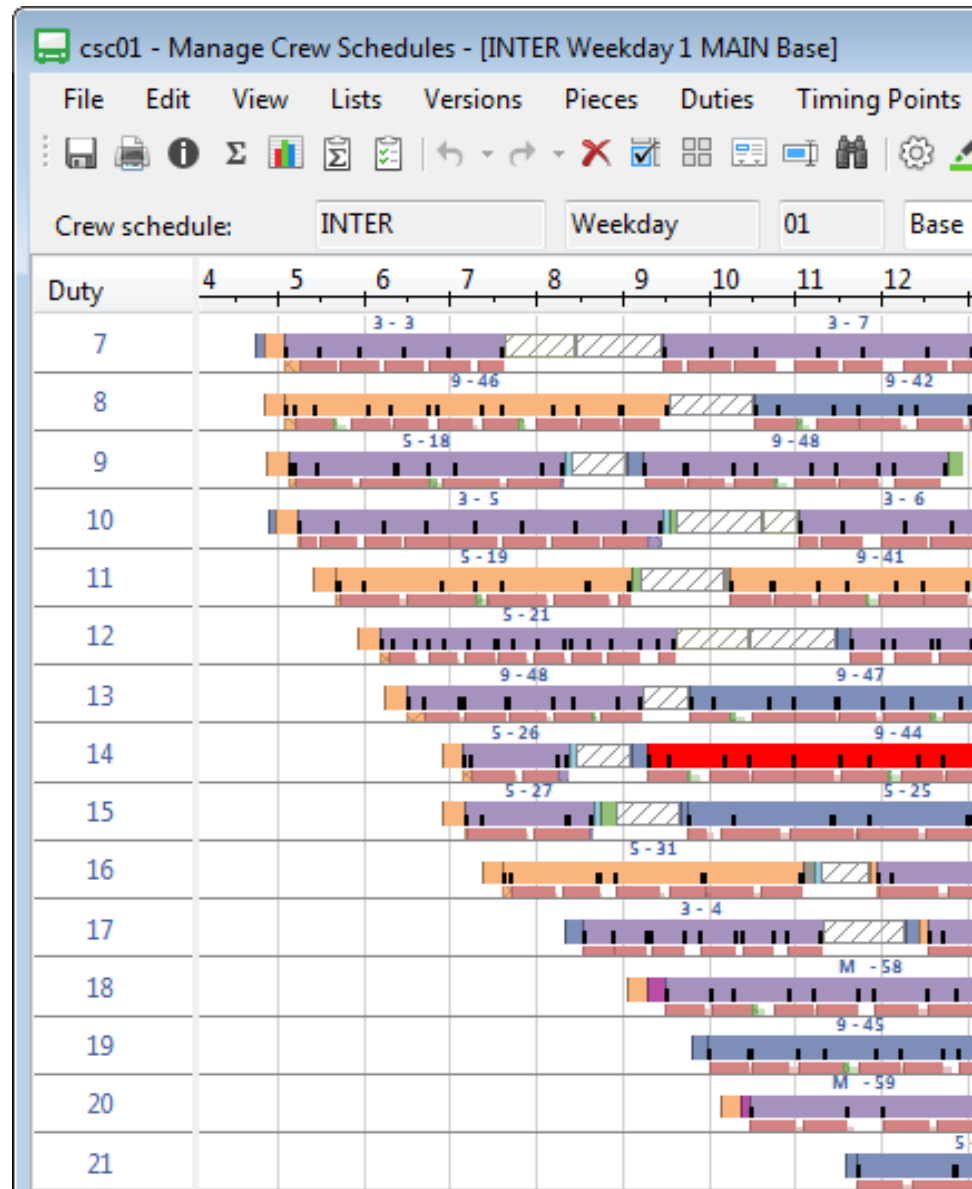
- Capacity & demand
- Circulation, spacing and capacity conflicts
- Timetable synchronization
- Vehicle balancing

Optimize employee duties

New parameters:
working time, pieces,
reliefs, dropbacks, etc.

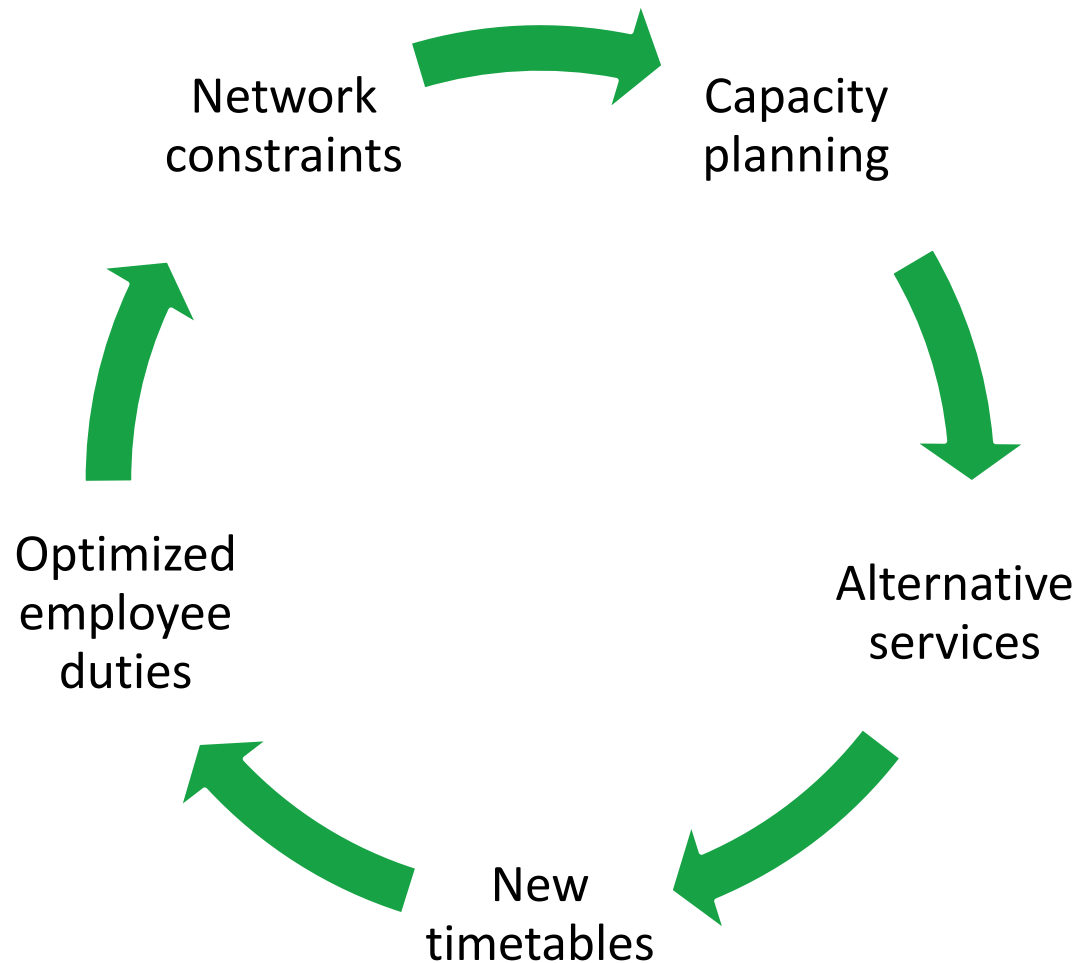
Minimize required
employees and
overtime

Ensure FRA\HoS
compliance



Takeaways

5 strategies to improve planning of works





Integrated Planning Software: benefits

Addresses the **challenge** of planning service around **heavy maintenance** activities and **infrastructure** projects

Reduces their impact on **service quality**

Used with the **right data**, enables more **effective** planning and **optimized** results

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Improving efficiency at every turn

