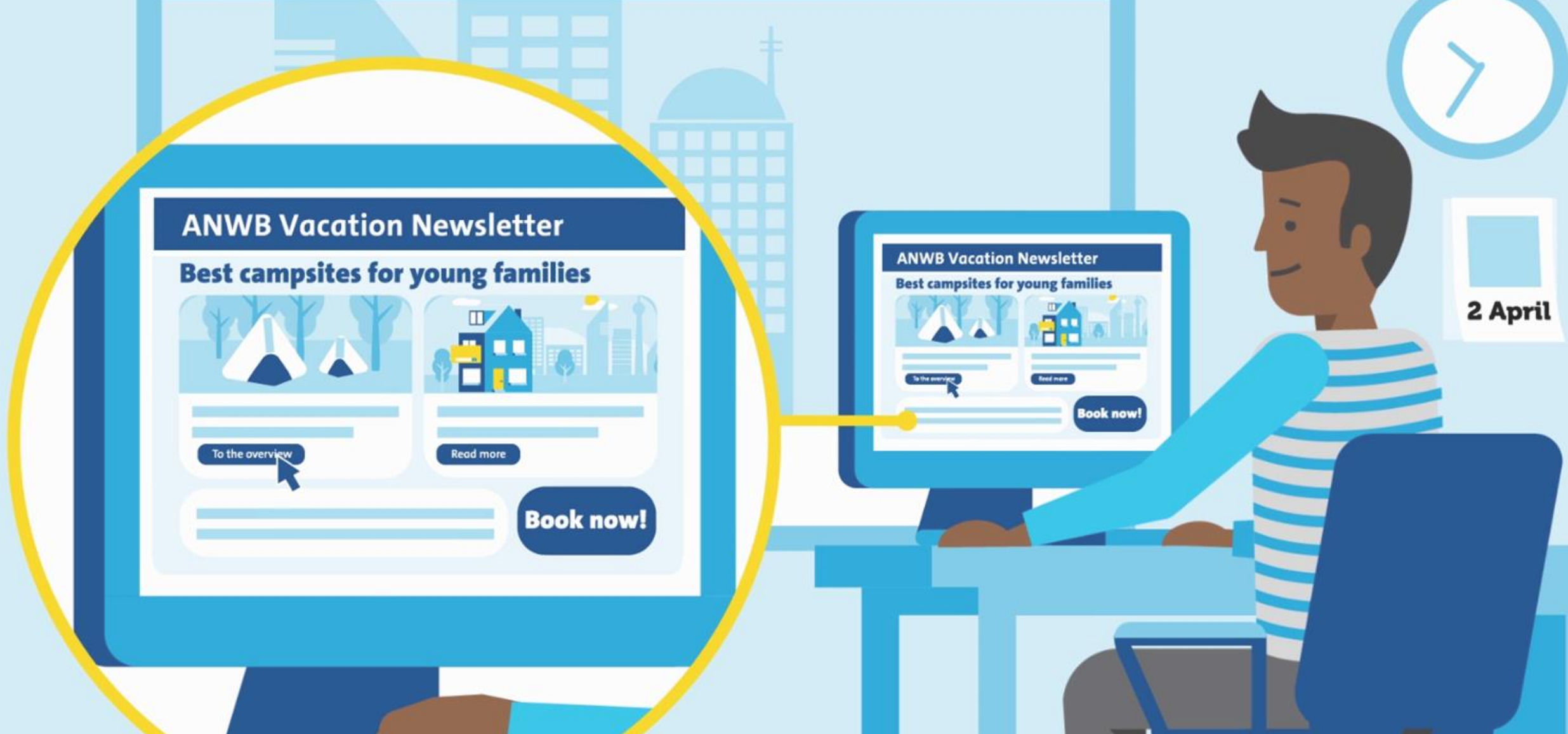




Using predictive marketing models to maximize relevance for our customers

KNIME Spring Talks 2021

Marlene Hakvoort & Hans Samson 





Personalized marketing



challenge



Personalized marketing & predictive models



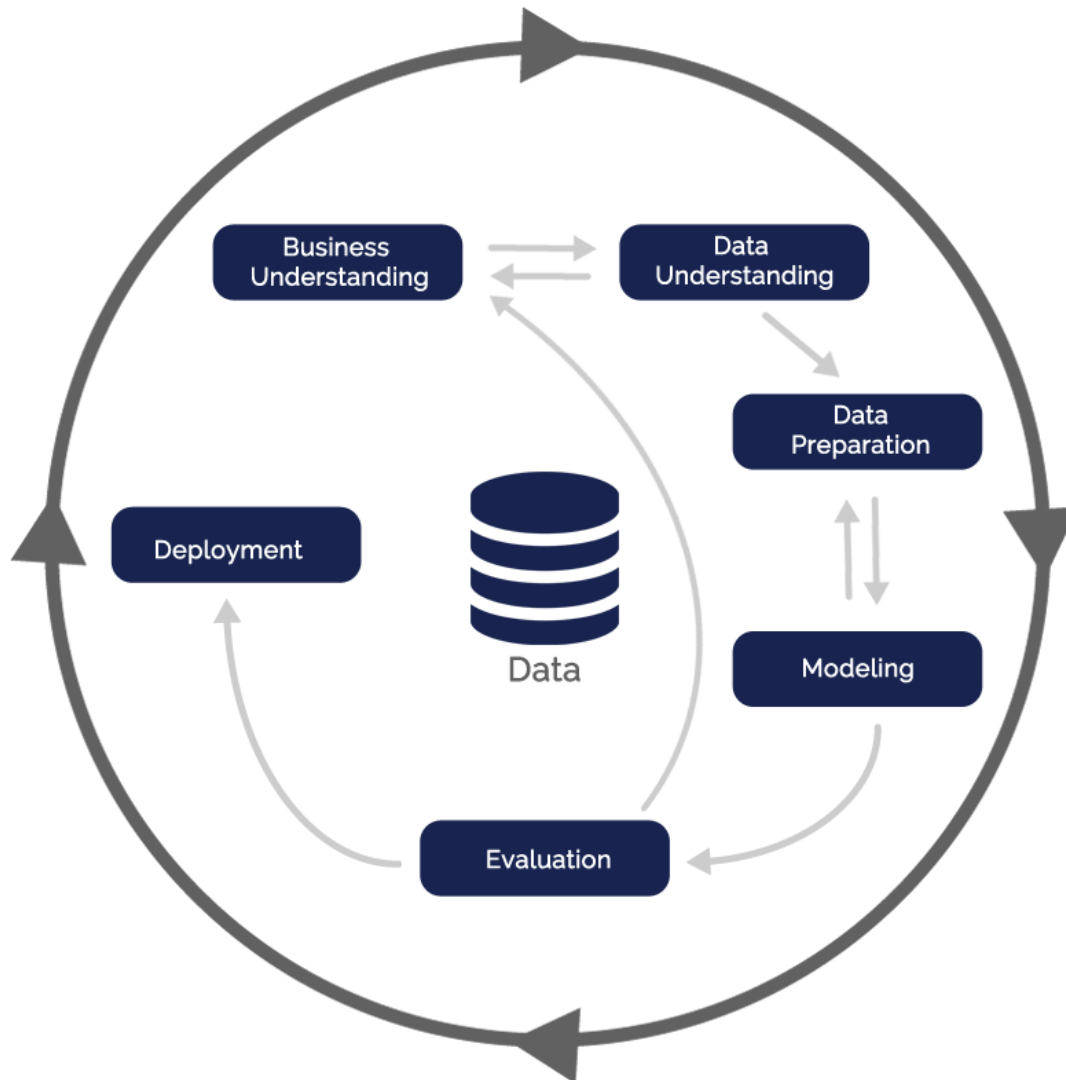
Customer ID	Propositions	Target	Channel	Model	Score	Priority
3100177	Travel insurance	Europe coverage	e-mail	ADR	0,0270	1
3100177	Travel company ANWB members	General	e-mail	ALR	0,0019	2
3100177	Roadside assistance Bike	Bike interest	e-mail	WFS	0,0018	3
3100177	Travel company FOX	Age 50+	e-mail	FOX	0,0005	4
2017801	Credit Card	General	e-mail	ACC	0,0310	1
2017801	Travel company ANWB members	General	e-mail	ALR	0,0014	2
2017801	Re-activate shop visitors	Visited shop > 2 years ago	e-mail	RET	0,0013	3

Preconditions for our model process

- Manageable
- Scalable
- Standardized
- Fast

Good models, but not *perfect* models

Model factory



Introducing and creating features with impact

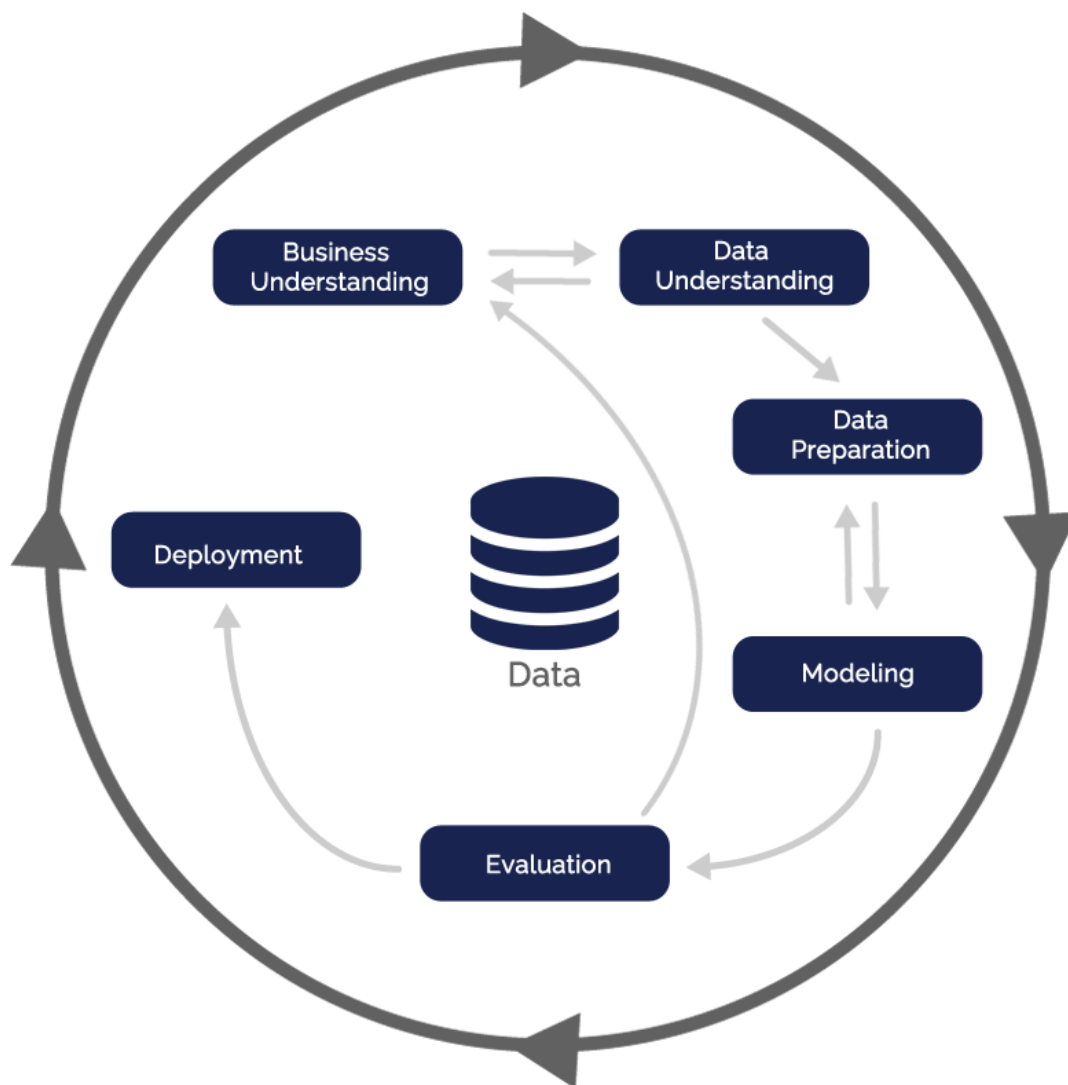


Model training with Integrated Deployment



Scoring models in an automated way

Model factory



Introducing and creating features with impact



Model training with Integrated Deployment

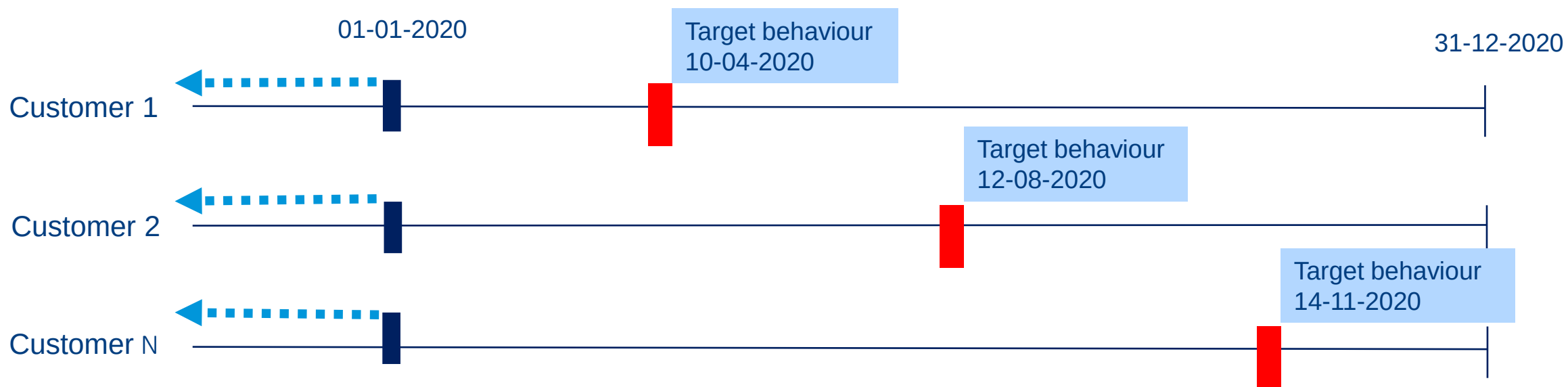


Scoring models in an automated way

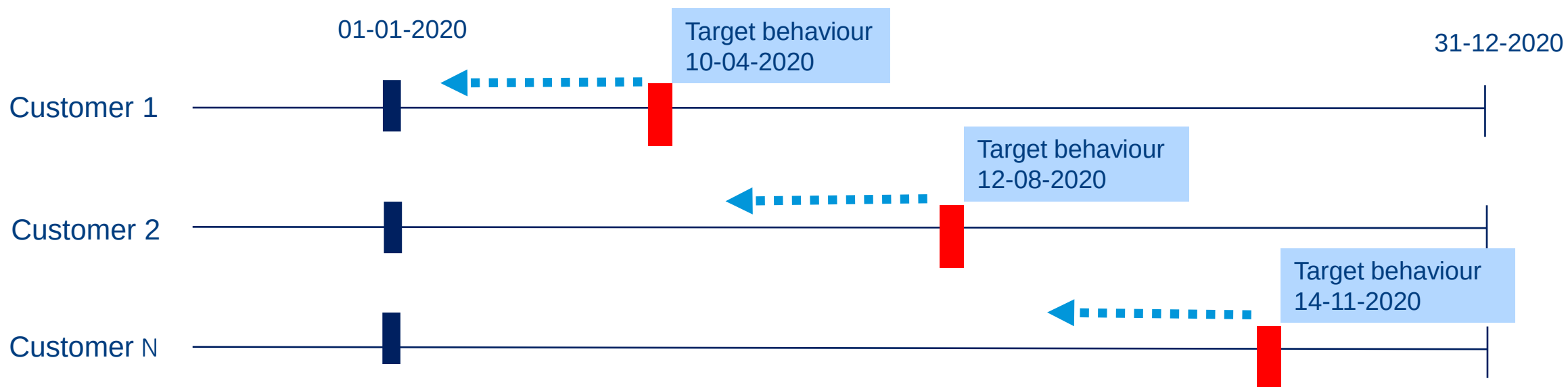
More recent online data, improves personalization

- Introducing features based on online behaviour
- Changing our way of working
 - Alignement of the date of the target behaviour with features
 - Changing the process of extracting features

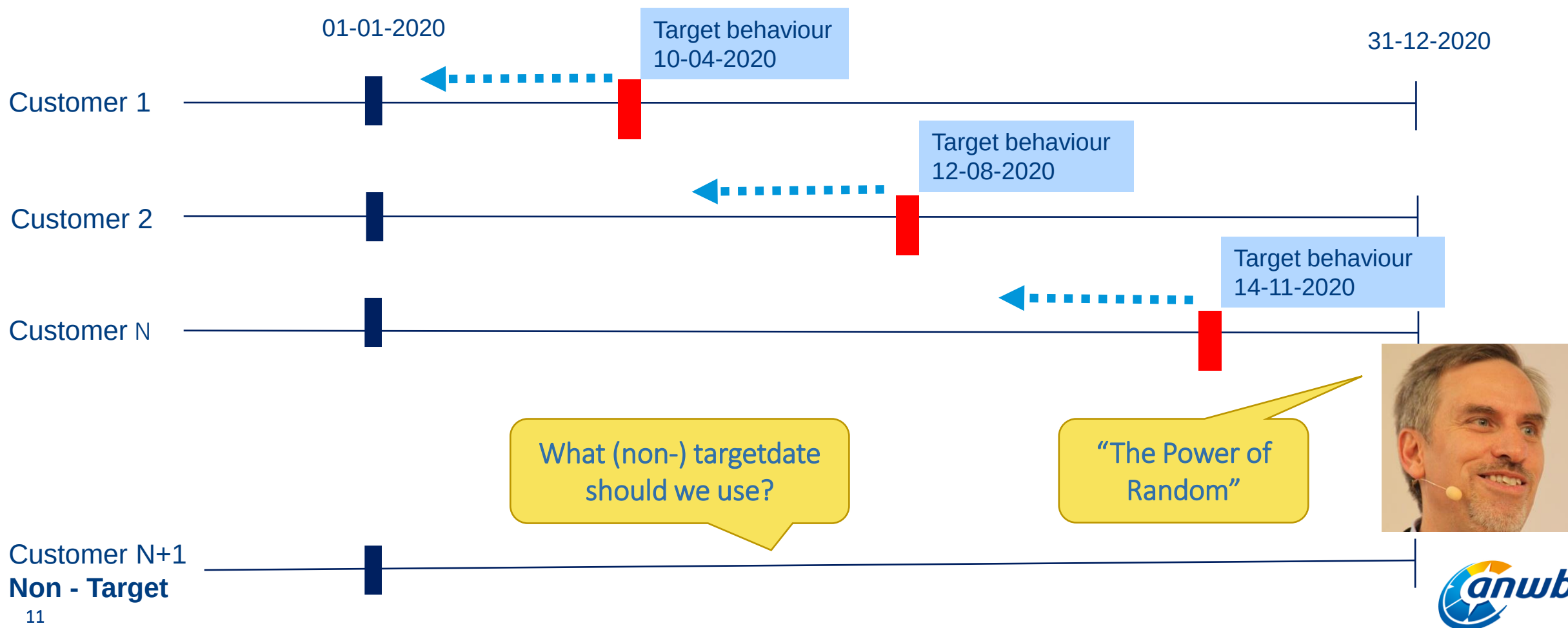
From model training with features based on a fixed date ...



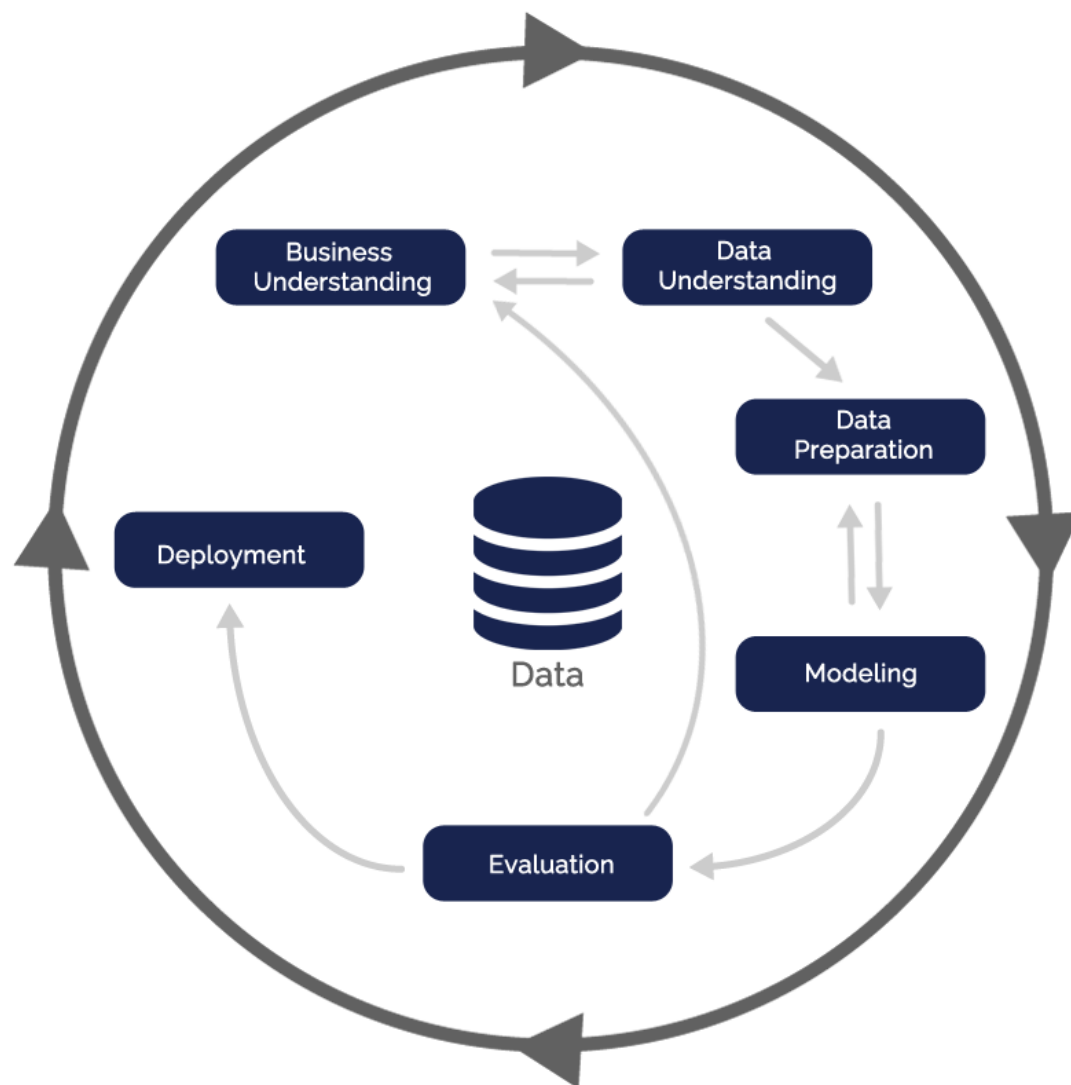
... to training a model where the features are aligned with the target date



... to training a model where the features are aligned with the target date



Model factory



Introducing and creating features with impact



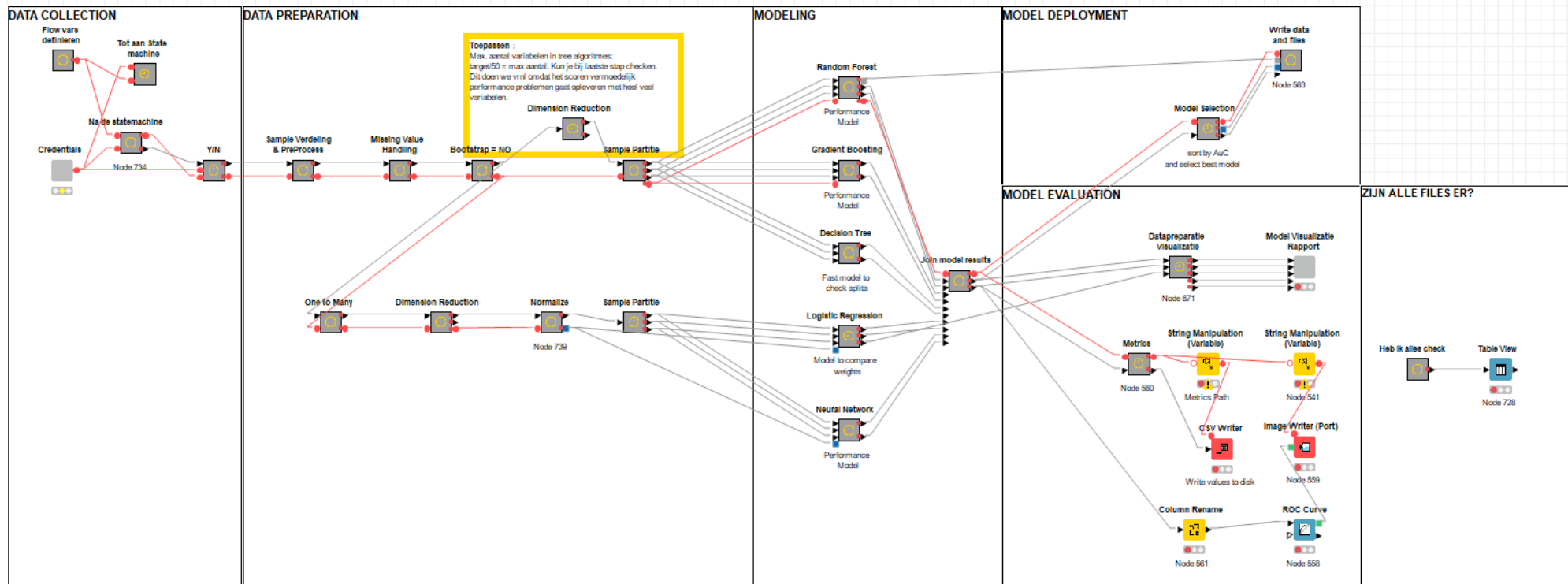
Model training with Integrated Deployment



Scoring models in an automated way

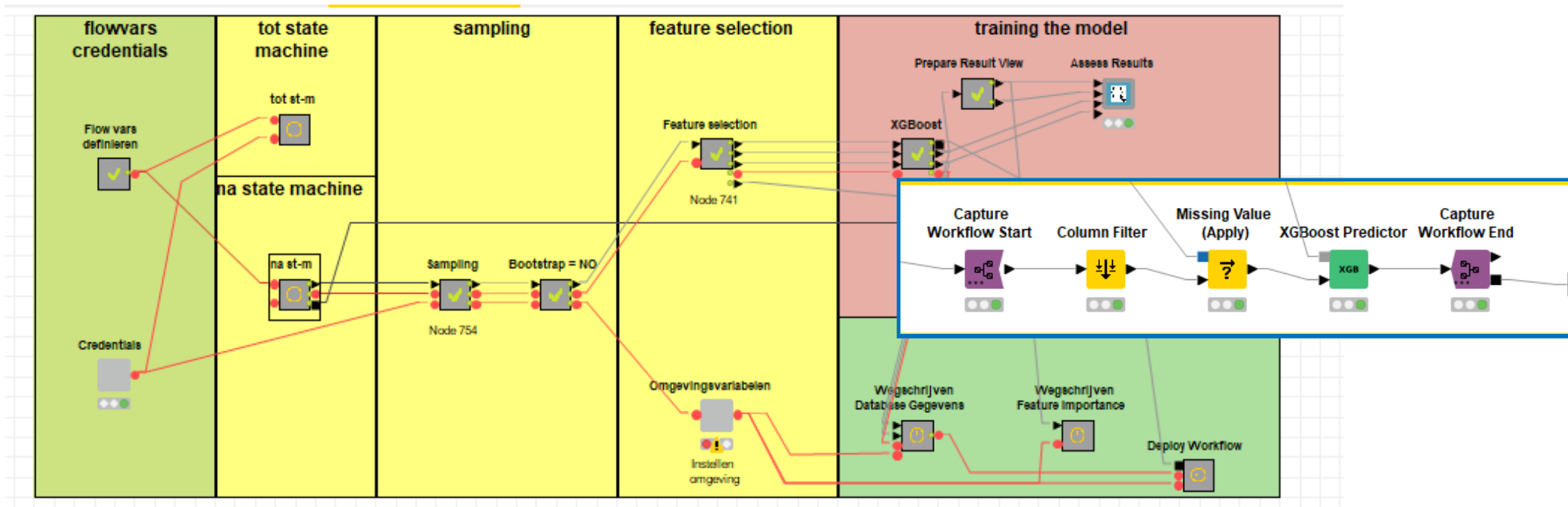
Train Template - Issues

- A faster and more robust way to get the score flow to production
- Reducing the turnaround time of the process to score all our models from weekly to daily (from over 8 hours for 40 models to...)

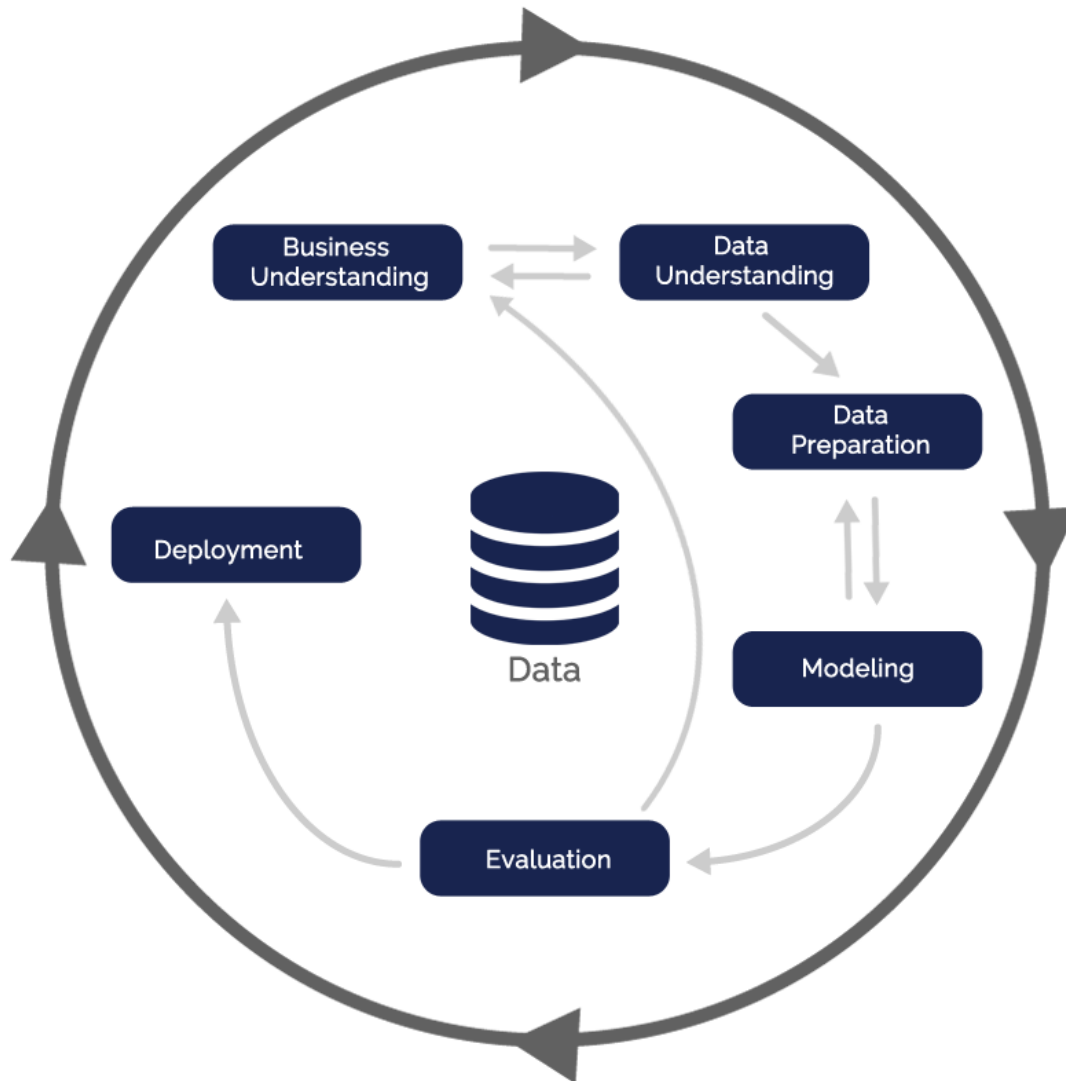


Train Template - Improvements

- Using only 1 algorithm, instead of 4
- Paying attention to feature importance
- Integrated deployment
- Per model, keeping only the relevant features in our scoring data-set



Model factory



Introducing and creating features with impact

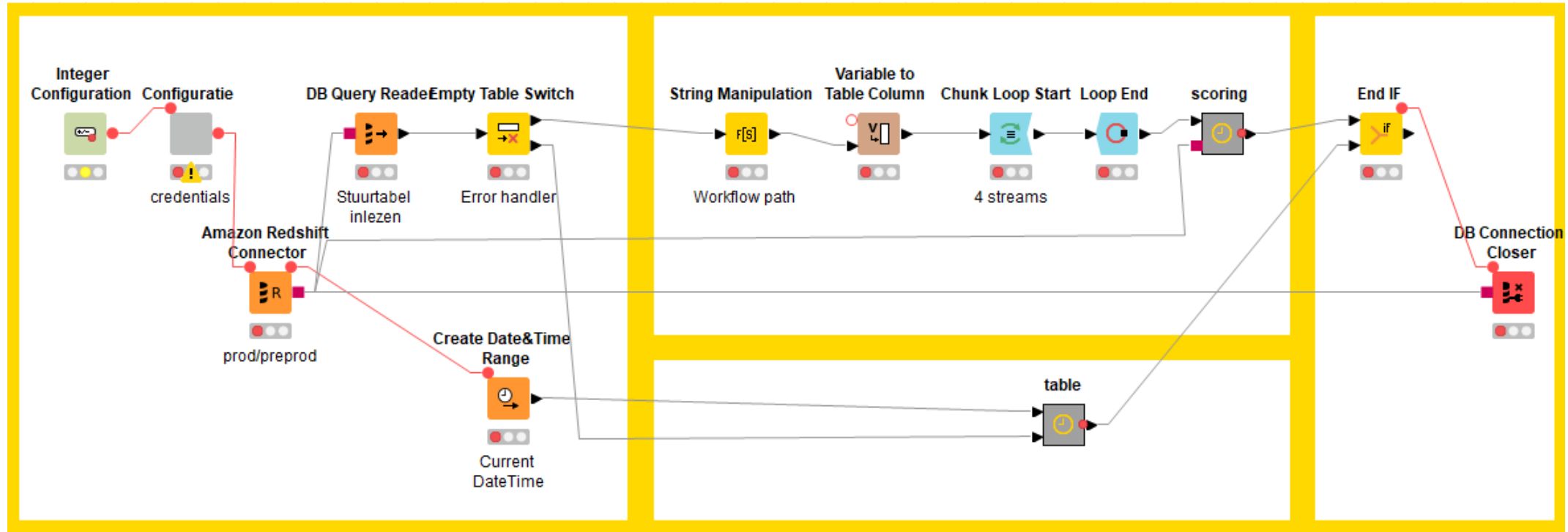


Model training with Integrated Deployment

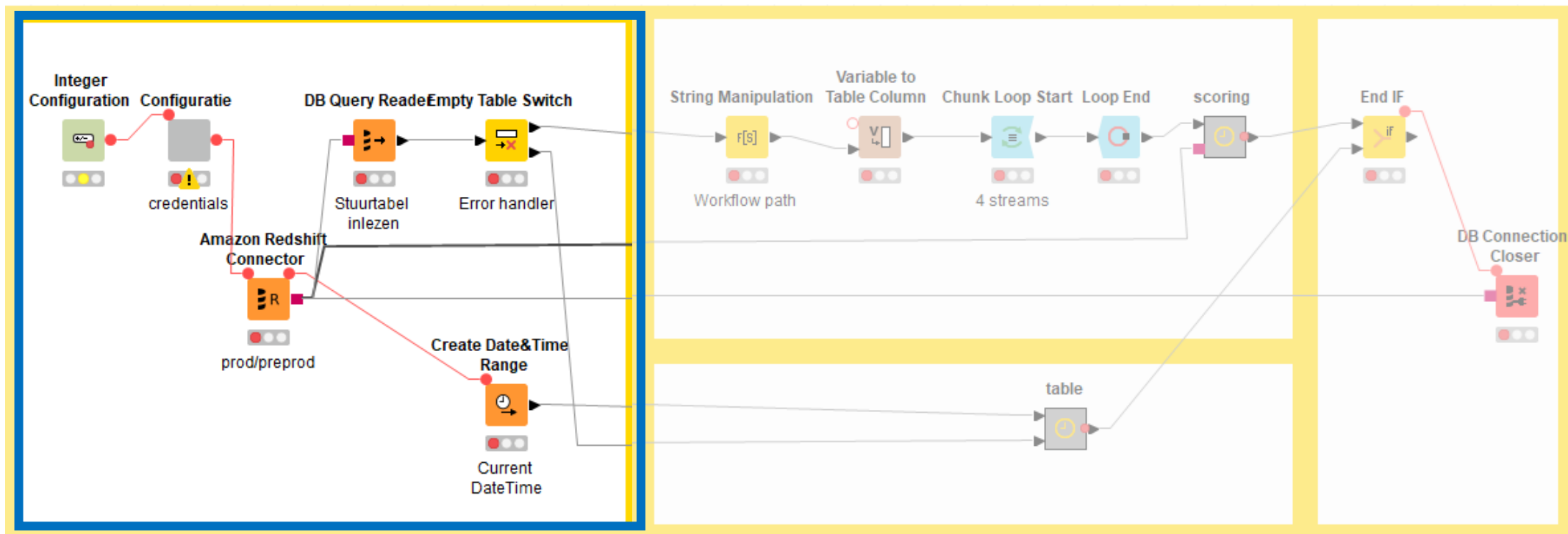


Scoring models in an automated way

Modelfactory: One control workflow

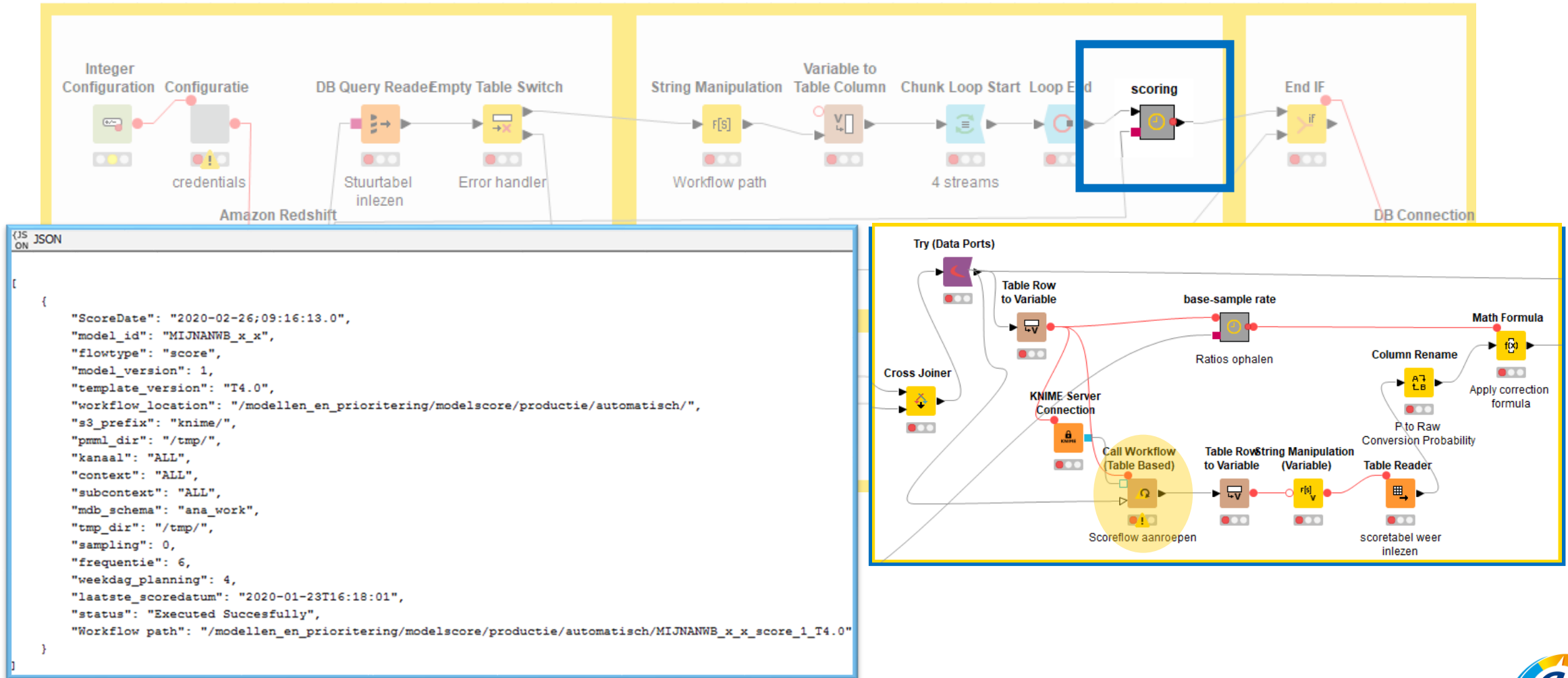


Modelfactory: Scheduling

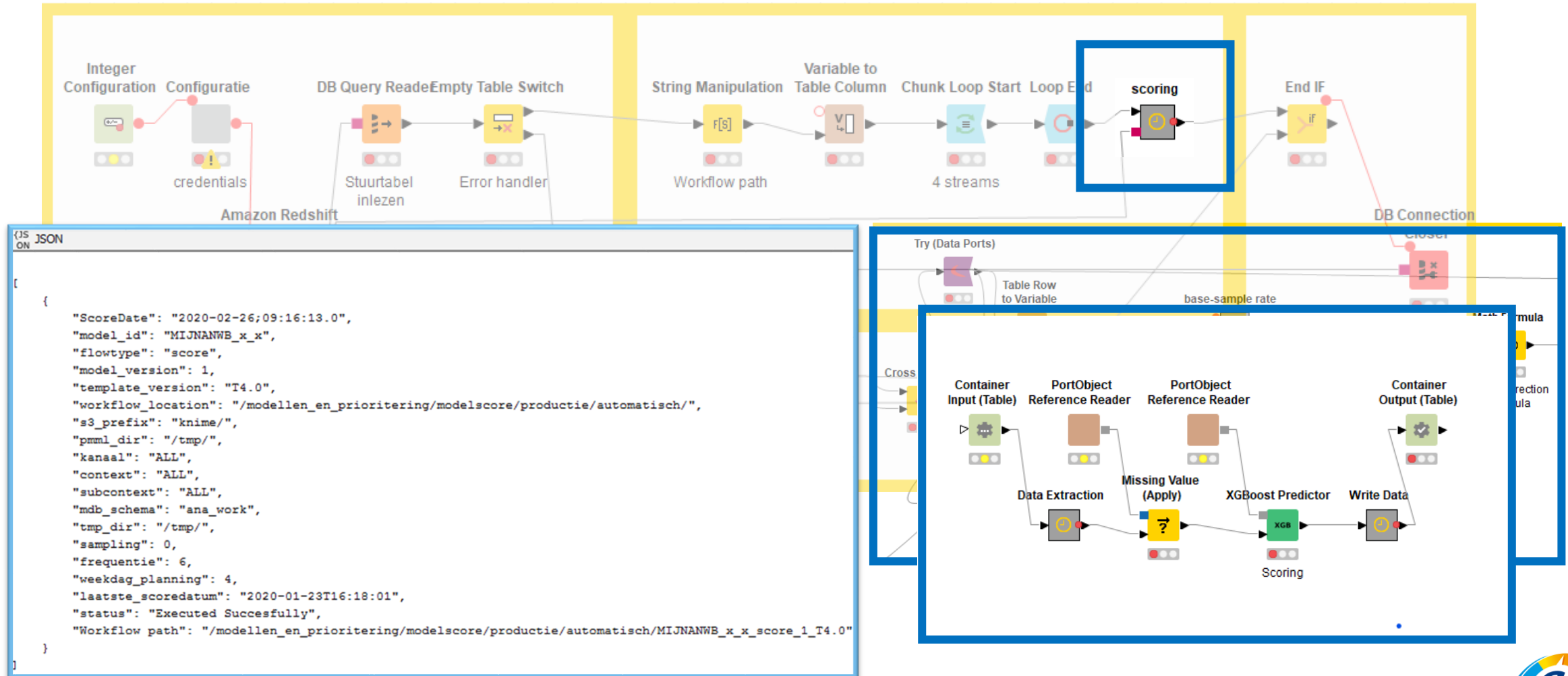


S	model_id	I	model_version	S	workflow_location	S	template_version	I	frequentie	I	weekdag_planning	laatste_score...	S	status	CurrentDate	S	Workflow path
	MIJNANWB_x_x	1			/modellen_en_prioritering/modelscore/productie/automatisch/		T4.0	6	4			2020-01-23T16:18...		Executed Succesfully	2020-02-19T14:38...		/modellen_en_prioritering/modelscore/productie/automatisch/MIJNANWB_x_x_score_1_T4.0
	AVZ_x_x_loya...	1			/modellen_en_prioritering/modelscore/productie/automatisch/		T4.1	6	4			2020-01-31T16:48...		Executed Succesfully	2020-02-19T14:38...		/modellen_en_prioritering/modelscore/productie/automatisch/AVZ_x_x_loyaliteit_score_1_T4.1
	WVZ_x_x	1			/modellen_en_prioritering/modelscore/productie/automatisch/		T4.1	6	4			2020-01-31T16:50...		Executed Succesfully	2020-02-19T14:38...		/modellen_en_prioritering/modelscore/productie/automatisch/WVZ_x_x_score_1_T4.1
	WWES_x_WWEI	12			/modellen_en_prioritering/modelscore/productie/automatisch/		T4.0	6	4			2020-01-31T20:47...		Executed Succesfully	2020-02-19T14:38...		/modellen_en_prioritering/modelscore/productie/automatisch/WWES_x_WWEI_score_12_T4.0
	FOX_x_x	11			/modellen_en_prioritering/modelscore/productie/automatisch/		T4.1	6	4			2020-01-31T20:40...		Executed Succesfully	2020-02-19T14:38...		/modellen_en_prioritering/modelscore/productie/automatisch/FOX_x_x_score_11_T4.1
	FBZ_x_x	12			/modellen_en_prioritering/modelscore/productie/automatisch/		T4.0	6	4			2020-01-31T23:59...		Executed Succesfully	2020-02-19T14:38...		/modellen_en_prioritering/modelscore/productie/automatisch/FBZ_x_x_score_12_T4.0

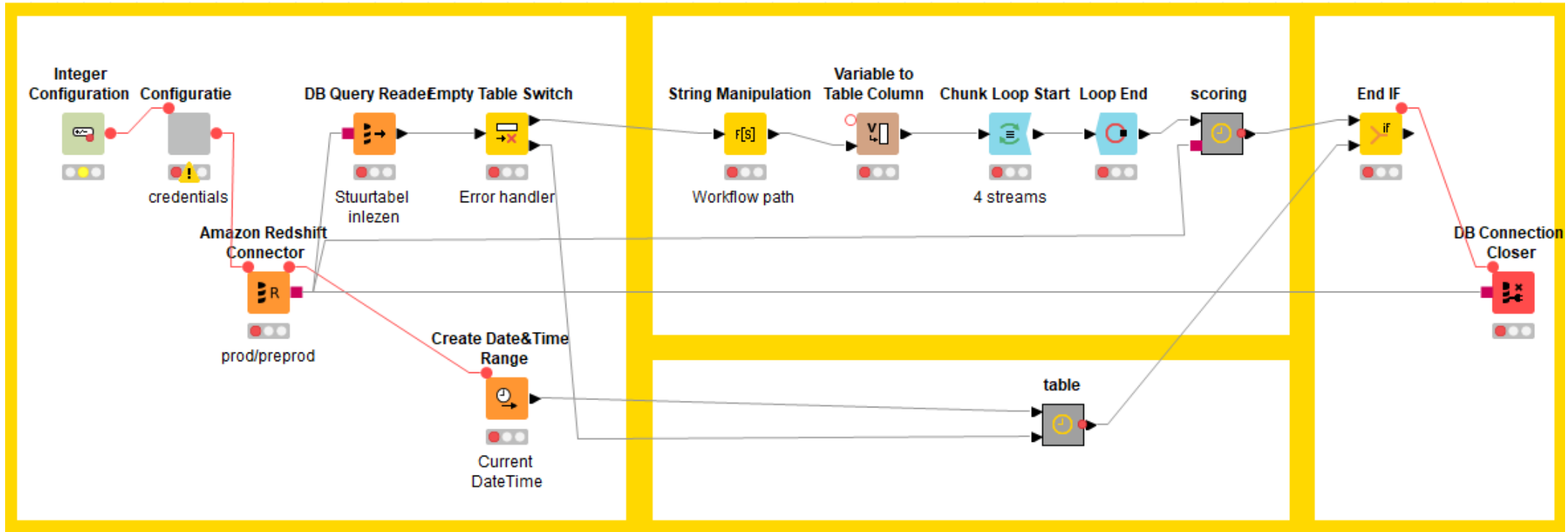
Modelfactory: Scoring



Modelfactory: Scoring



Modelfactory: One control workflow



4 hours to score 51 models with on average 3 million customers per model

KNIME can make a dream come true

But you can't keep on dreaming

- Create better models
 - Use online data
 - Align feature date with target date

		D_Hb_dch...	D_Hb_arfstan...	D_Hb_rec...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...
Breda	Binnen 5 KM	217	1,828	1,828	1,828	1,828	219	219	27				
Heerhugum...	Binnen 5 KM	158	253	547	158	253	1,828	1,828	17				
Deventer	Tussen 11 - 15 ...	905	1,828	1,828	1,828	1,828	905	1,828	30				
Beersrug	Tussen 6 - 10 KM	1,828	1,828	1,828	1,828	1,828	1,828	1,828	0				
Heeren	Binnen 5 KM	1,828	1,828	1,828	1,828	1,828	1,828	1,828	0				
Tilburg	Tussen 6 - 10 KM	879	1,828	1,828	1,828	1,828	879	879	27				
Amsterdam	Tussen 6 - 10 KM	575	575	1,828	575	1,828	1,828	1,828	34				
Apeldoorn	Tussen 10 - 25 ...	14	14	214	1,120	214	604	604	49				
Heerenvo...	Tussen 11 - 15 ...	26	26	869	417	1,828	1,828	1,828	33				
Heerengraaf...	Orbelsend	218	1,828	1,828	1,828	1,828	218	1,828	299				
Heerhugum...	Tussen 10 - 25 ...	231	1,828	231	1,828	1,828	1,828	1,828	309				
Edo	Tussen 6 - 10 KM	430	1,828	1,828	776	622	430	1,665	41				
Heerhugum...	Meer dan 25 KM	288	1,828	1,828	288	1,828	288	288	7				
Goer	Tussen 6 - 10 KM	193	1,828	1,828	193	850	1,828	1,828	9				
Leeuwarden	Binnen 5 KM	802	1,828	802	1,828	1,828	1,828	1,828	69				
Den Haag 1	Binnen 5 KM	1,344	1,828	1,828	1,828	1,828	1,828	1,828	54				
Eindhoven	Orbelsend	1,828	1,828	1,828	1,828	1,828	1,828	1,828	0				
Uden	Tussen 11 - 15 ...	124	311	450	414	124	1,828	1,828	0				
Helmond	Binnen 5 KM	1,828	1,828	1,828	1,828	1,828	1,828	1,828	0				
Tilburg	Tussen 6 - 10 KM	479	479	1,828	1,243	1,828	1,828	1,828	11				
Almere	Binnen 5 KM	1,828	1,828	1,828	1,828	1,828	1,828	1,828	5				
Tiel	Tussen 11 - 15 ...	341	1,828	1,828	1,828	341	1,828	1,828	17				
Heerenvo...	Binnen 5 KM	231	231	1,828	1,828	1,828	1,828	1,828	38				
Heerengraaf...	Binnen 5 KM	273	1,828	273	1,828	1,828	1,828	1,828	15				
Apeldoorn	Binnen 5 KM	456	456	456	1,828	1,828	1,828	1,828	15				
Heerengraaf...	Orbelsend	1,828	1,828	1,828	1,828	1,828	1,828	1,828	0				
Haarlem	Binnen 5 KM	22	1,828	22	871	1,828	352	514	33				
Heerenvo...	Tussen 6 - 10 KM	157	219	456	1,828	582	157	1,828	25				
Haam	Tussen 10 - 25 ...	89	1,828	89	89	1,828	1,828	1,828	4				
Rotterdam 1	Binnen 5 KM	191	1,828	1,828	191	1,828	1,828	1,828	24				

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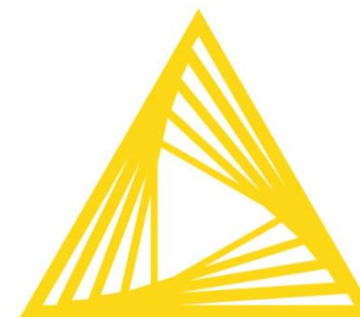
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- Shorter time to production,
- A more robust scoring process
- Easier to manage and maintain

		D_Hb_dich...	D_Hb_arfstan...	D_Hb_rec...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...
Breda	Binnen 5 KM	217	1,828	1,828	1,828	1,828	217	217	17				
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Deventer	Tussen 11 - 15 ...	905	1,828	1,828	1,828	1,828	905	1,828	30				
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Liden	Tussen 11 - 15 ...	124	311	450	414	124	1,828	1,828	0				
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Tilburg	Tussen 6 - 10 KM	479	479	1,828	1,243	1,828	1,828	1,828	11				
Almere	Binnen 5 KM	1,828	1,828	1,828	1,828	1,828	1,828	1,828	5				
Tiel	Tussen 11 - 15 ...	341	1,828	1,828	1,828	341	1,828	1,828	17				
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Heerhugum...	Tussen 6 - 10 KM	197	219	456	1,828	582	197	1,828	25				
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Rotterdam 1	Binnen 5 KM	191	1,828	1,828	191	1,828	1,828	1,828	24				



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- Use online data
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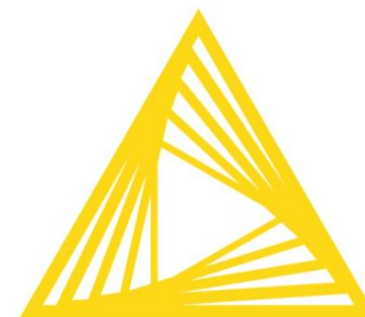
- **Improve the process** (by using integrated deployment)

- Shorter time to production,
- A more robust scoring process
- Easier to manage and maintain

- **Make progress**

- Automate as much as possible
- Set up monitoring
- Seek external collaboration and knowledge

	D_Hb_dch...	D_Hb_arfstan...	D_Hb_rec...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...	D_Hb_m...
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Apeldoorn	Tussen 10 - 25 ...	14	14	214	1,120	214	604	604	48
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Almere	Binnen 5 KM	1,828	1,828	1,828	1,828	1,828	1,828	1,828	5
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Heerhug...	Binnen 5 KM	273	1,828	273	1,828	1,828	1,828	1,828	15
Apeldoorn	Binnen 5 KM	456	456	456	1,828	1,828	1,828	1,828	15
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Rotterdam 1	Binnen 5 KM	191	1,828	1,828	191	1,828	1,828	1,828	24



Personalization at ANWB

For all our 4,8 Mio members:

the right propositions at the right time, through the right channels, in the right way.

Special thanks to:

pers👤nalyse & **crystalloids**

ANWB winnaar DDMA Customer Data Award 2020



De winnaar van de DDMA Customer Data Award 2020 is vandaag bekend gemaakt. ANWB wist dit jaar de jury het meest te imponeren en ging er met de hoofdprijs vandoor. De vereniging liet daarmee de andere genomineerde organisaties DPG Media en Jumbo Supermarkten achter zich.

Om de dienstverlening aan haar 4,7 miljoen leden te verbeteren en 24/7 te bedienen heeft ANWB gekozen voor een centrale personalisatie-aanpak. Inmiddels bedient ANWB leden gericht vanuit 7 centraal gepersonaliseerde kanalen.

Met een grote 'kanaalbewustheid' (zeven verschillende

Would you like to know more about the ANWB model factory. Give it a +1 in the chat.