Hoonete intelligentne energiajuhtimine

R8 Digitaalse Operaatoriga

Säästa, teeni ja naudi!



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Chief Operating Officer
R8 Technologies OÜ

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R8tech numbrites

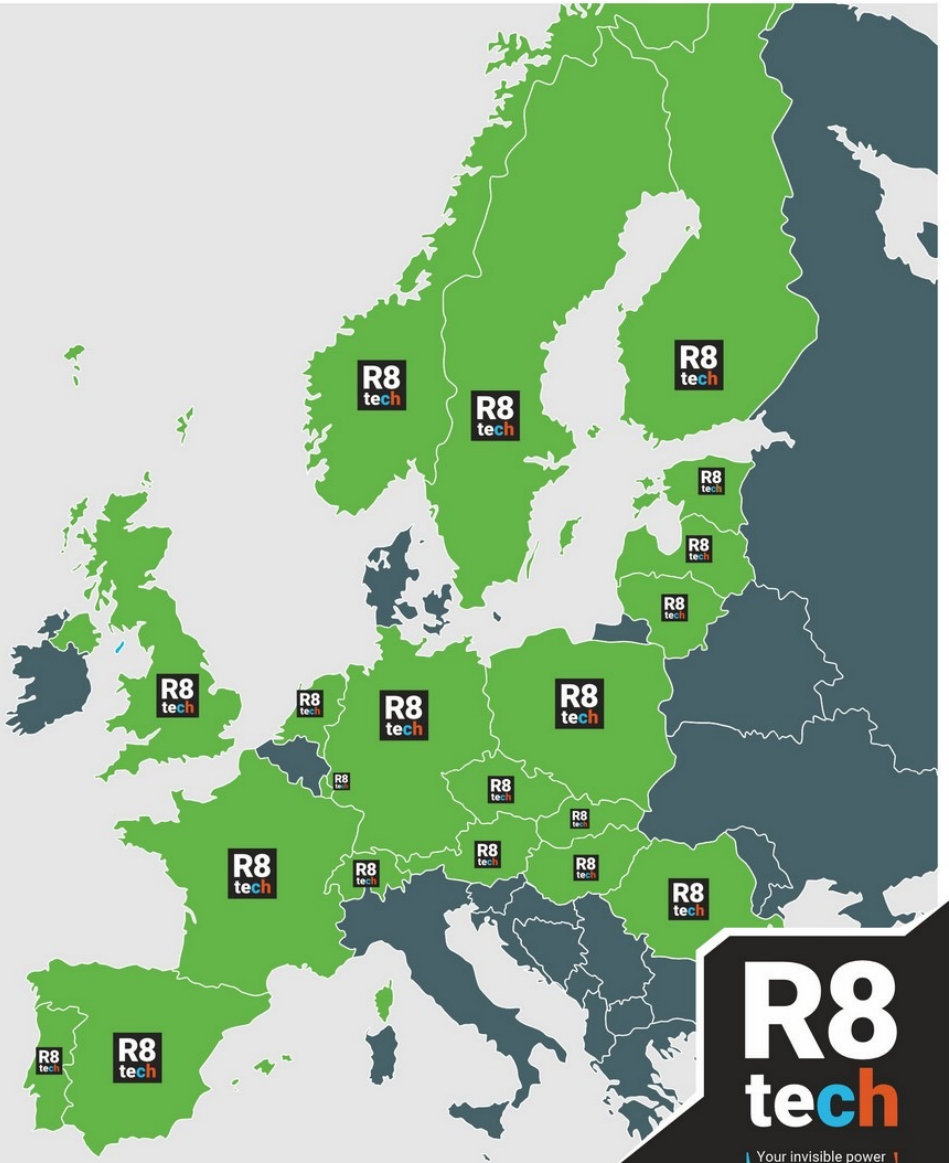
asutatud **2017**

19 riiki

20t+ tonni CO_2 säästetud

1.7M+ m² portfelli suurus

5B€+ portfelli väärtus



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Referentsid: 1 700 000+ m²

Kaubandus







Hotellid







Kontorid







Avalikud hooned







Enam infot: https://r8tech.io/all-countries/



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Lahendus -15% ilma kannatusteta!

EU: The first response to tackle high prices is to reduce demand

-5%

obligation to cut down 5% of peak price

-10%

aim to reduce overall demand at least 10%

https://ec.europa.eu/commission/presscorner/detail/et/IP_22_5489

R8 Technologies already has a working solution for that goal:

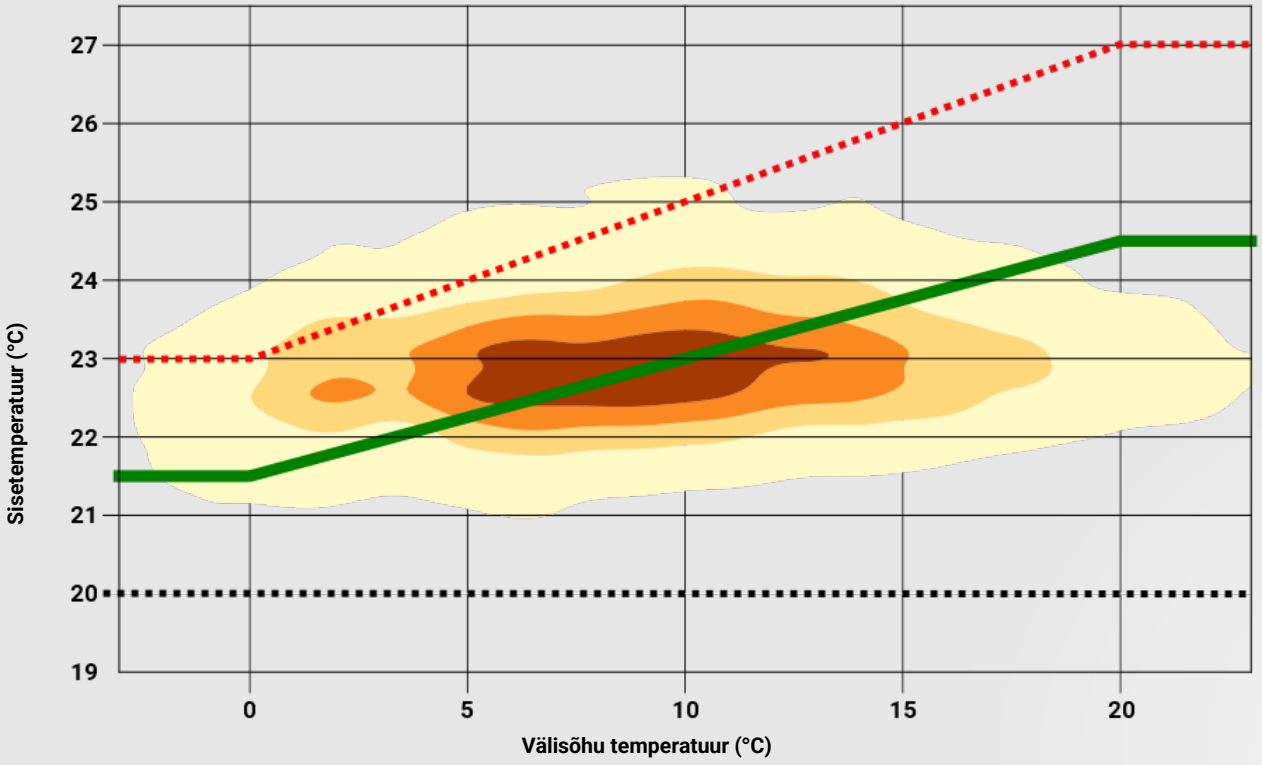
R8 Digital Operator reduces more than 15% of energy costs and earns money for our customers from reacting to the power grid requests for shifting the load!



-15%

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Naudi mugavat sisekliimat



Sihttemperatuur vastavalt sisekliima standardile

Maksimaalne lubatud temperatuur.

Minimaalne lubatud temperatuur

>95% ajast temperatuur soovitud sisekliima vahemikus

Juhtimine ruumide ja/või tsoonide kaupa



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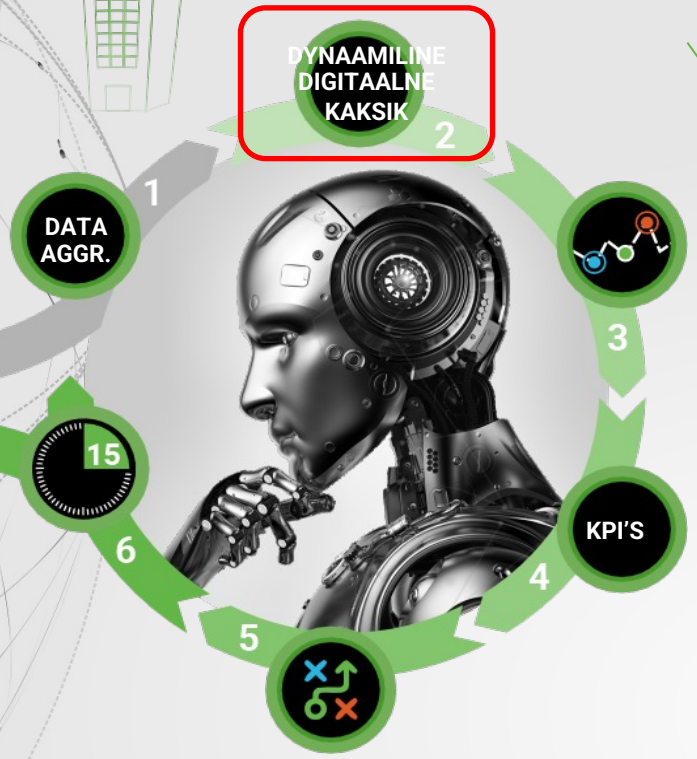
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Eestis loodud tehnoloogia!

R8 BIM andmeside nõuded!

Kasutan masinloetavaid andmeid ja õpin pidevalt uusi mustreid!







3 KPIs

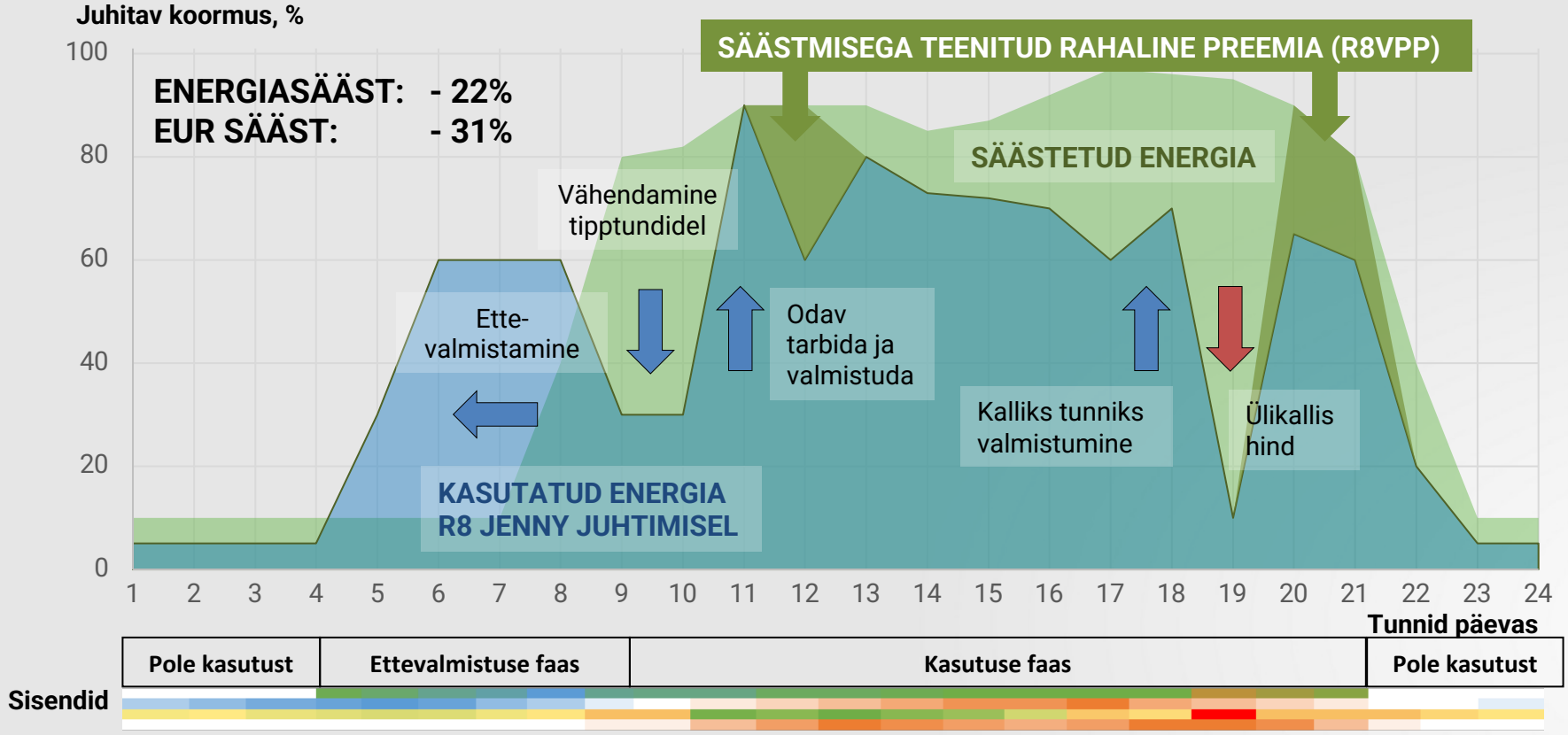
SOOVITUD SISEKLIIMA: > 90% | CO2 & ENERGIA SÄÄST: >15% | ELUKAARE KULUD MADALAMAD: ~20%

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Näide: tehisintellektil põhinev juhtimine

Pidev proaktiivne optimeerimine päeva jooksul tagab mugava sisekliima minimaalsete kuludega!





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R8 Digitaalse Operaatori käivitamine

Leping sõlmitud!

DIGITALISEERIMINE TOIMIVUSANALÜÜS

1-2 NÄDALAT



R8 DIGITAALNE OPERAATOR



1-2 NÄDALAT

R8 VIRTUAALNE ELEKTRIJAAM



Hoone opereerib efektiivselt!

TULEMUSTE RAPORTEERIMINE

KUU



VÄHEM CO2 KLIIMA EESMÄRGID



Tarkvara kui teenus

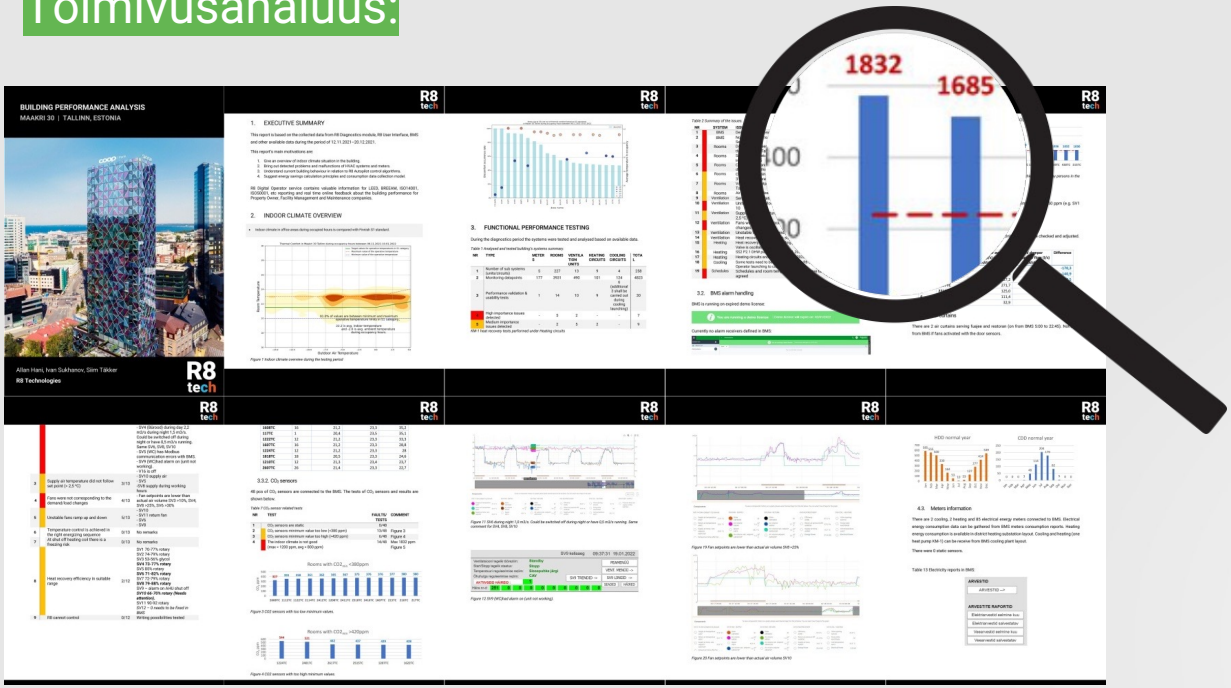
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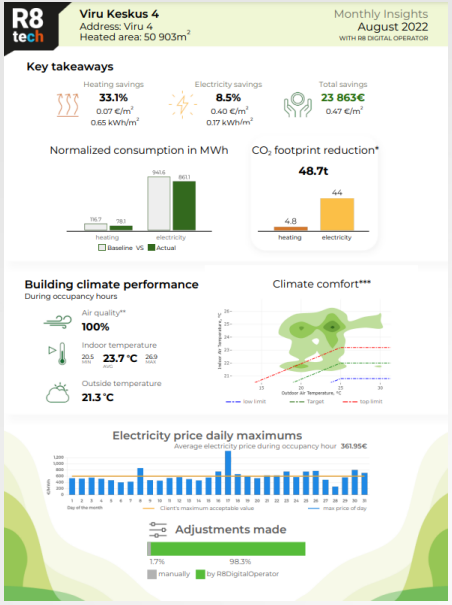
Hoone toimivuse Raporteerimine

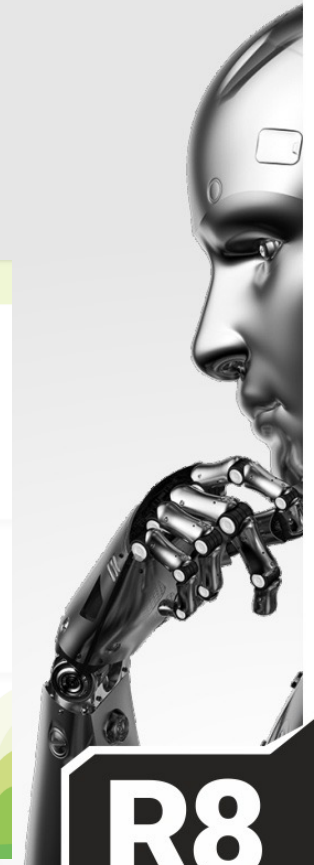
Lihtsalt ja kiirelt ülevaade süsteemide toimivusest

Toimivusanalüüs:



Kuu Raport:





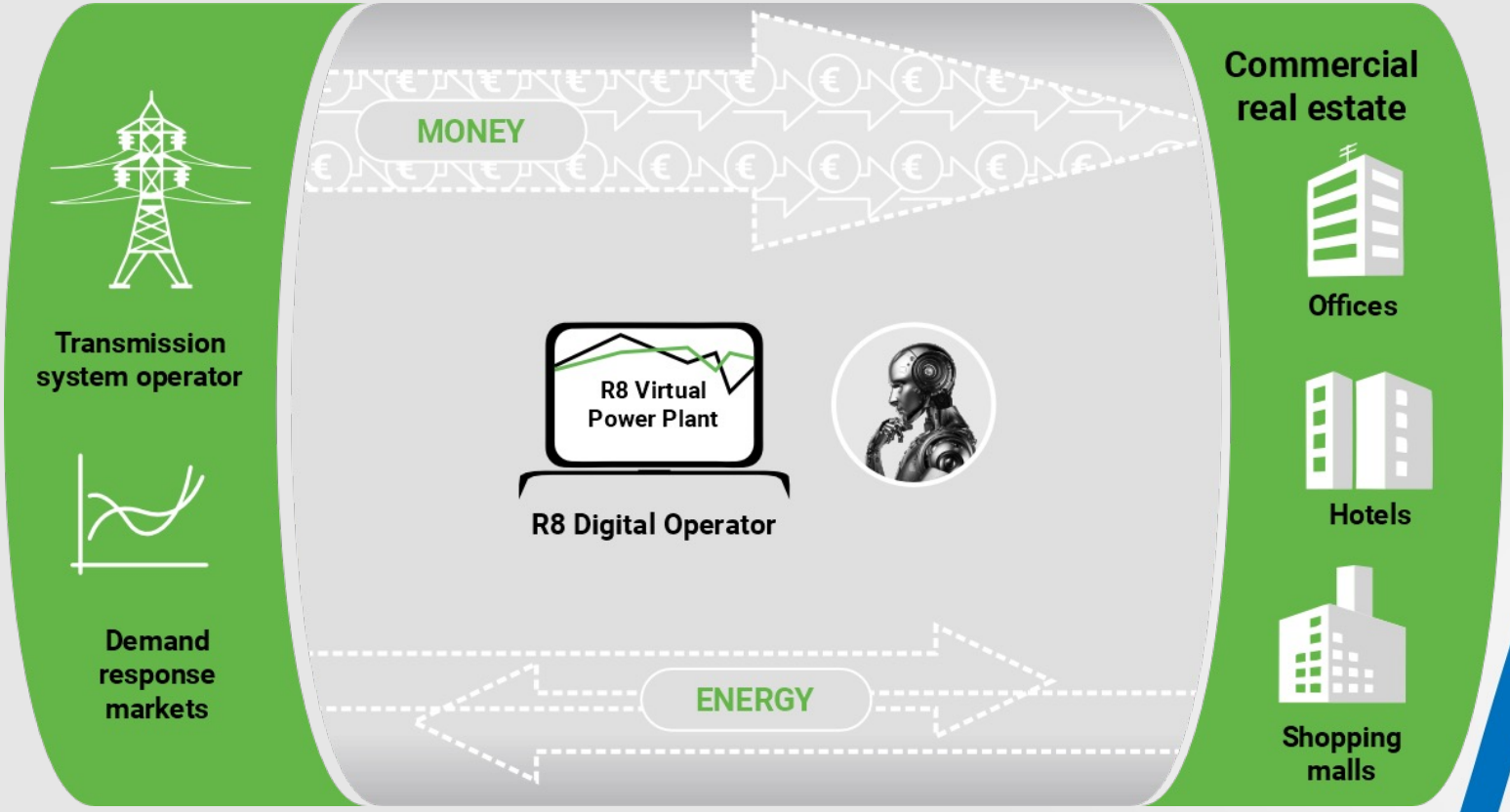
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R8 Virtuaalne Elektrijaam (R8VPP)

Elektrivõrgu ebabilansile reageerimisega saavad kliendid täiendavalt raha teenida!

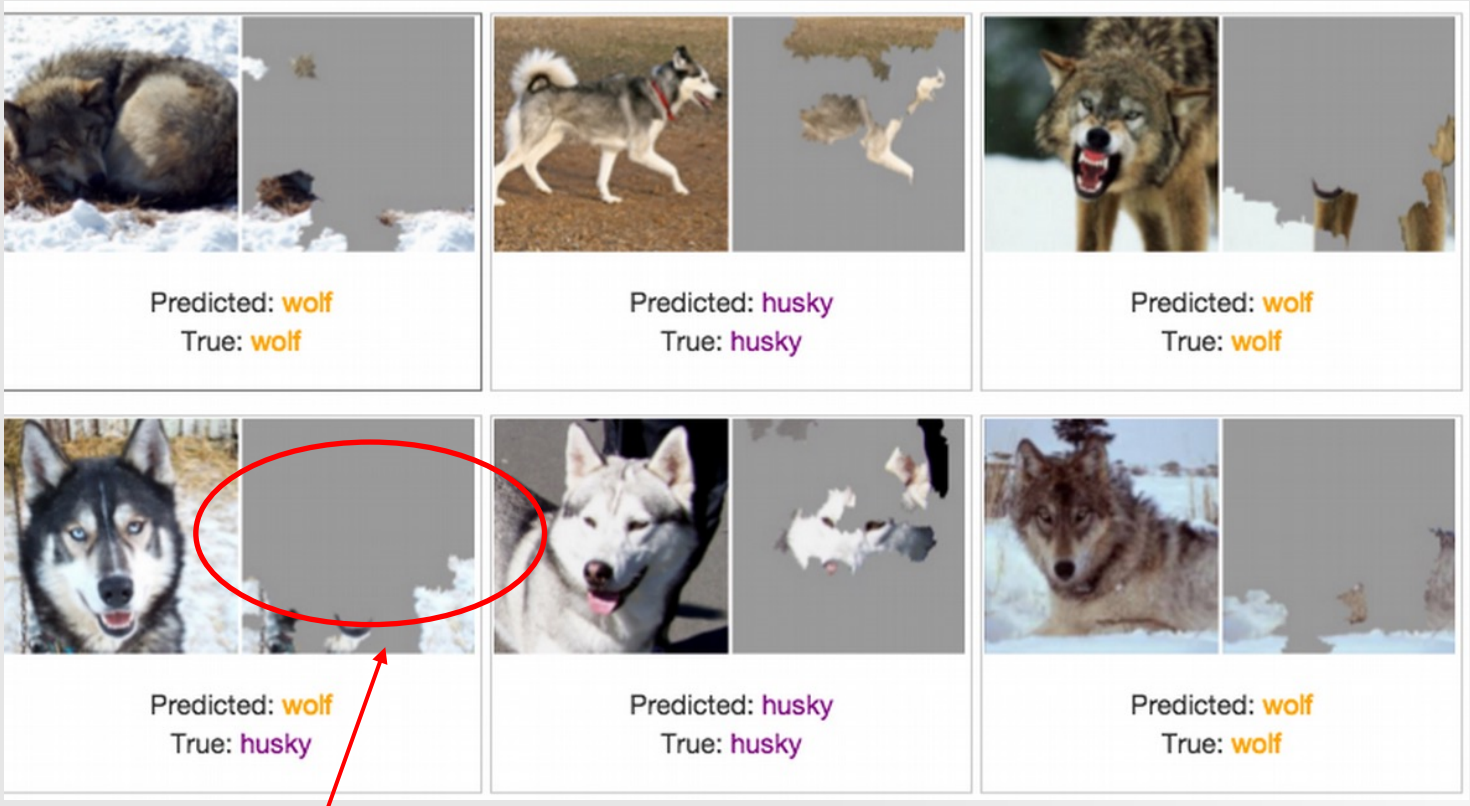
Mugav sisekliima on tagatud!



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Miks kasutab R8tech eXplainable AI-d?



LUMI oli otsuse
põhjuseks, miks otsustati
ennustada HUNT!



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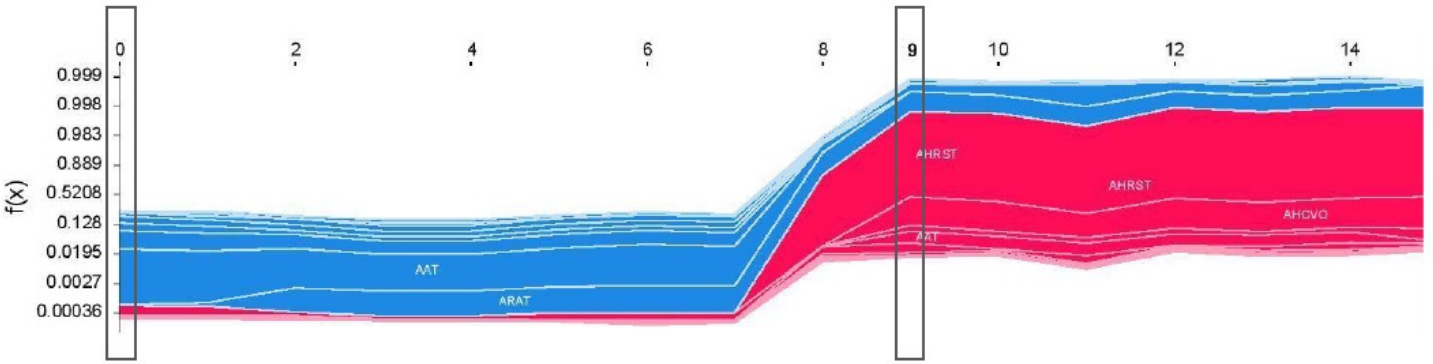
Explaining faults

Case 1: Heat recovery not working

Feature	XGBoost			
	NOT HR_NW		HR_NW	
	Real	SHAP	Real	SHAP
AAT	**3.85**	-3.37	**5.45**	-0.12
ACCVO	0.0	0.08	0.0	0.10
AHCT	19.31	-0.03	20.63	0.02
AHCVO	0.0	-0.20	49.15	1.59
AHRS	**26.46**	-1.39	**100**	0.06
AHRST	**14.96**	-0.16	**5.55**	5.85
ARAT	**22.73**	-0.33	**21.53**	5.85
ARFS	40.00	-0.57	42.0	1.30
ASAT	18.09	0.04	17.57	0.02
ASATCSP	18.0	0.06	18.5	-0.53
ASFPE	13.22	-0.05	13.63	-0.12
ASFPESP	14.0	-0.39	14.0	-0.19
ASFS	45.22	0.54	45.64	0.70

No faulty state is evaluated at the 0th instance
Faulty state is evaluated at the 9th instance

Quantitative explanations for XGBoost prediction of the 'HR_NW (heat recovery not working)' type of fault.



'Heat Recovery not Working' type of the fault: Simulation results using XGBoost based models with SHAP explanation method. X-axis represents the fault probability. Y-axis represents the timesteps.

R8 meeskonna publikatsioonid

1. https://www.etis.ee/CV/Eduard_Petlenkov/est
2. https://www.etis.ee/CV/Juri_Belikov/est
3. https://www.etis.ee/CV/Ahmet_Kose/est
4. https://www.etis.ee/CV/Aleksei_Tepljakov/est
5. https://www.etis.ee/CV/Allan_Hani/est
6. https://www.etis.ee/CV/Lauri_Loo/est
7. https://www.etis.ee/CV/TuuleMall_Kull/est
8. https://www.etis.ee/CV/Mikk_Maivel/est

Theory + Practice

=

Next level value

HVAC + XAI

=

Next level value



Pakub huvi? *GR8!*

Võtame **energiakulud** kontrolli alla!



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