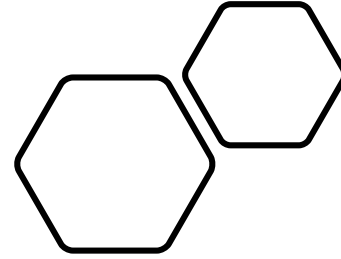


Utilities Data in Land Administration Systems

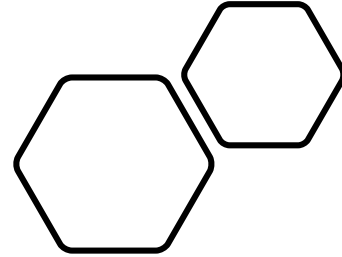


Grgo Dželalija and Miodrag
Roić, Croatia

Summary

- Utility networks are valuable resource
- In the past utility networks were rarely registered
- Utility networks have legal and physical characteristics
- Research about utility registration mainly through the topic of 3D cadastre
- Different approaches to utility registration
- Try to unify and standardize utility registration through LADM
- In this paper...

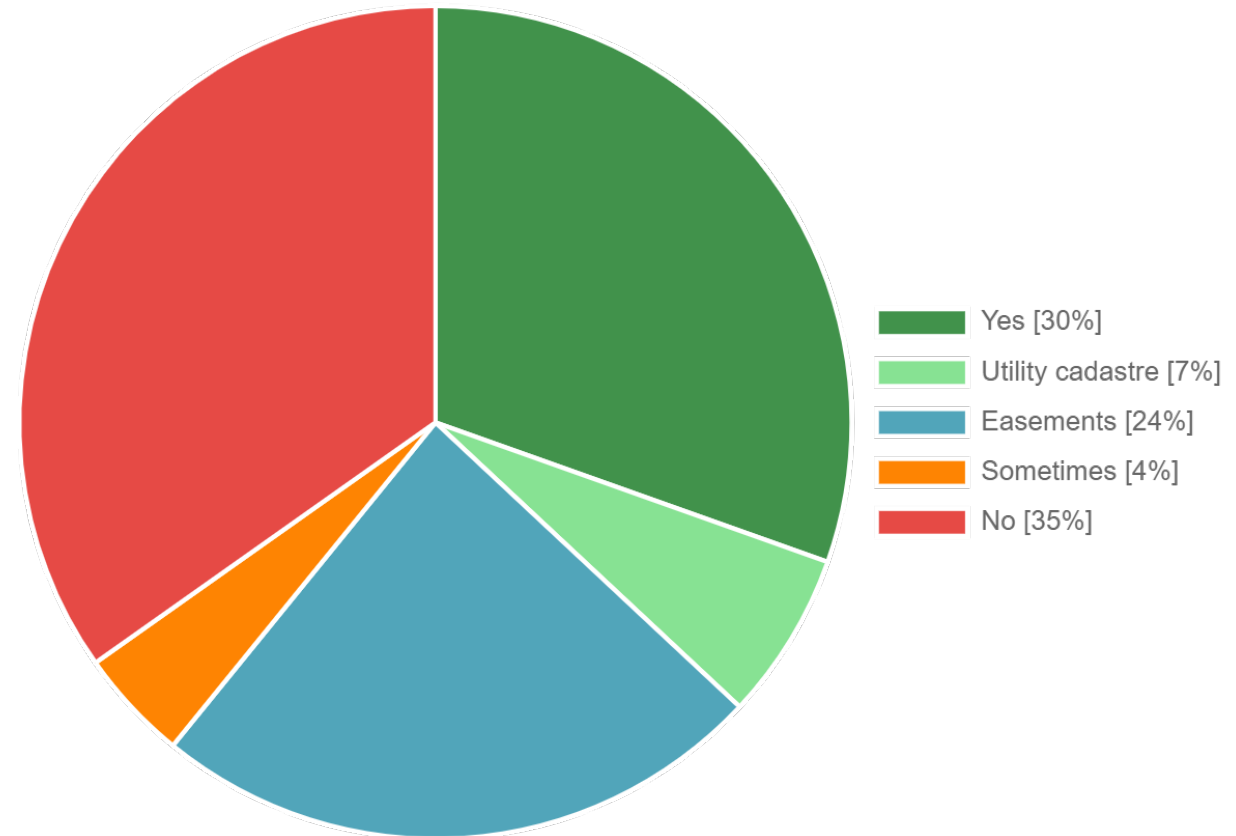
3D Cadastre Questionnaire



- 2010 Questionnaire (36 participating jurisdictions)
- 2014 Questionnaire (31 participating jurisdiction)
- 2018 Questionnaire (34 participating jurisdictions)
- 46 jurisdictions participated at least in one questionnaire

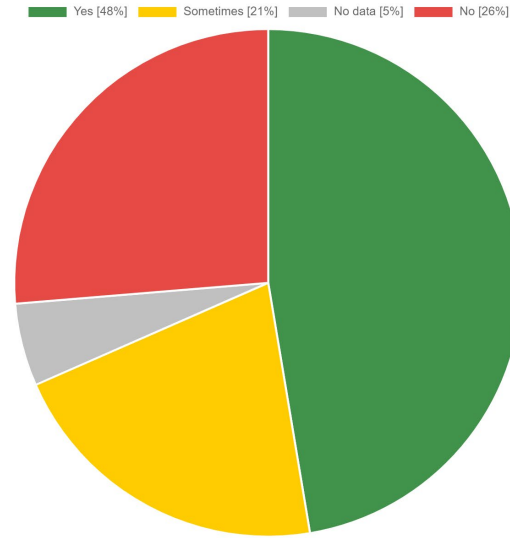
2.1. Do you register networks as an entity in the land administration?

- 14 jurisdictions registered networks as an entity in the LA + 2 in some cases
- 11 jurisdictions register easements in LA
- Croatia, Serbia and Slovenia have separate utility cadastre

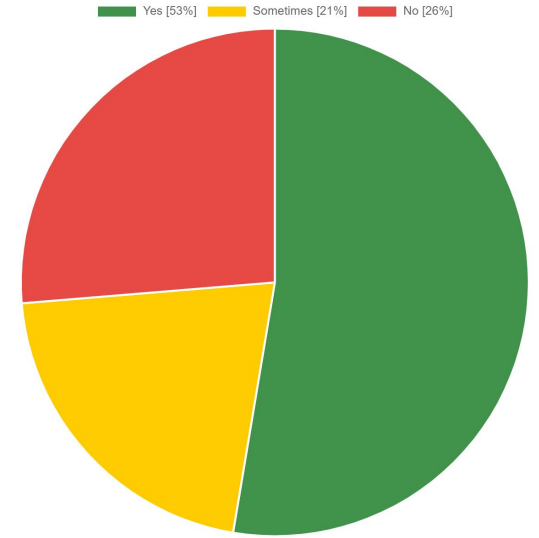


Jurisdictions that answered 2.1 with yes, in some cases or have dedicated utility cadastre

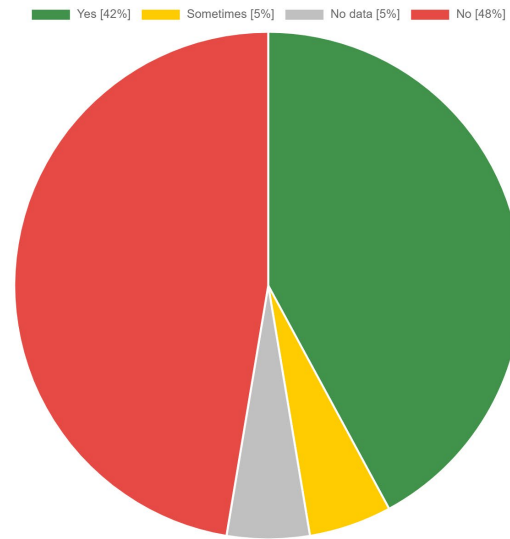
- 69% of jurisdictions can view network graphically in the land administration
- 74% of jurisdictions can trace network structure in the database
- 47% of jurisdictions have networks registered by means of cadastral identifier
- 53% of jurisdictions have RRRs and parties attached to network objects
- Seven out of 19 jurisdictions fulfill all 4 questions.



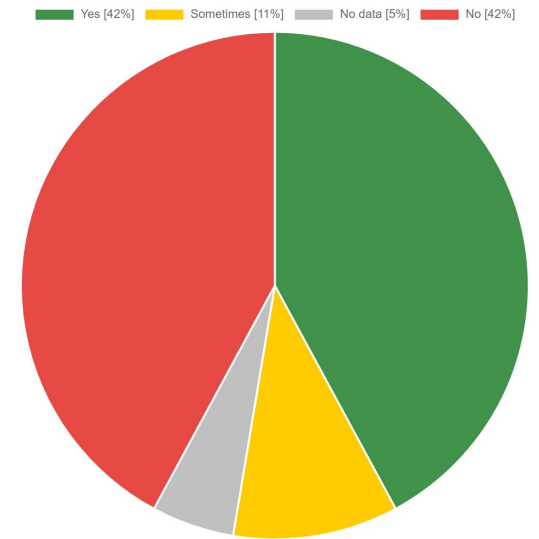
2.2a



2.2b



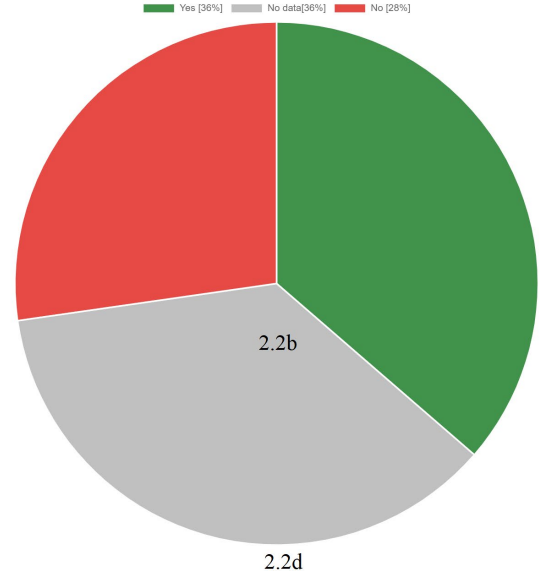
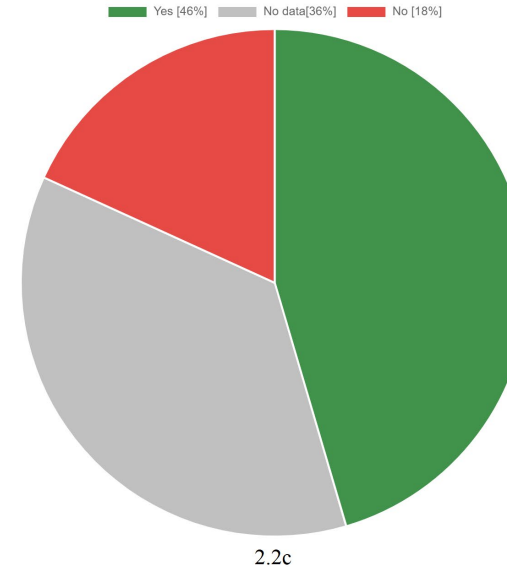
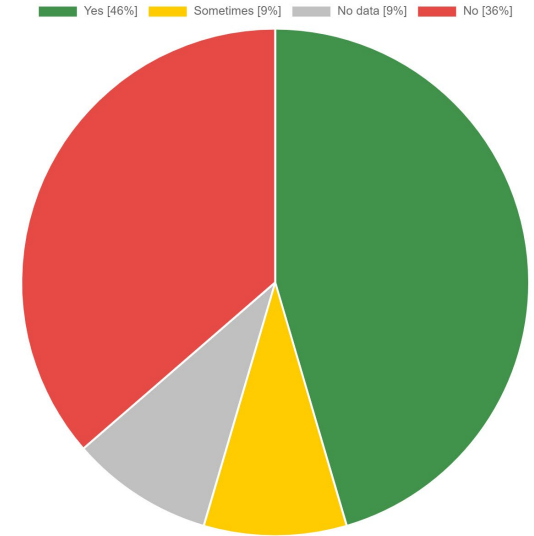
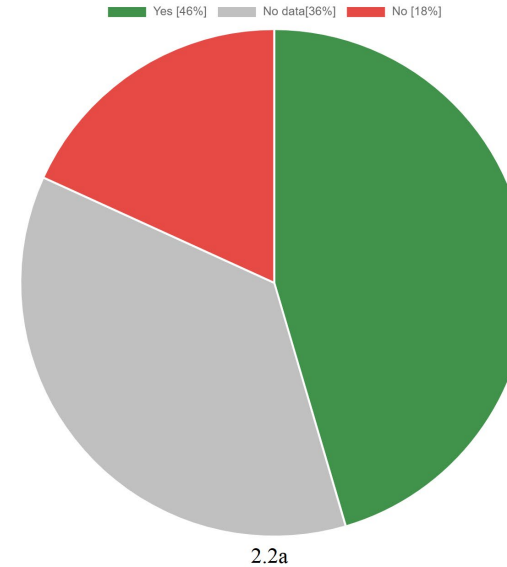
2.2c



2.2d

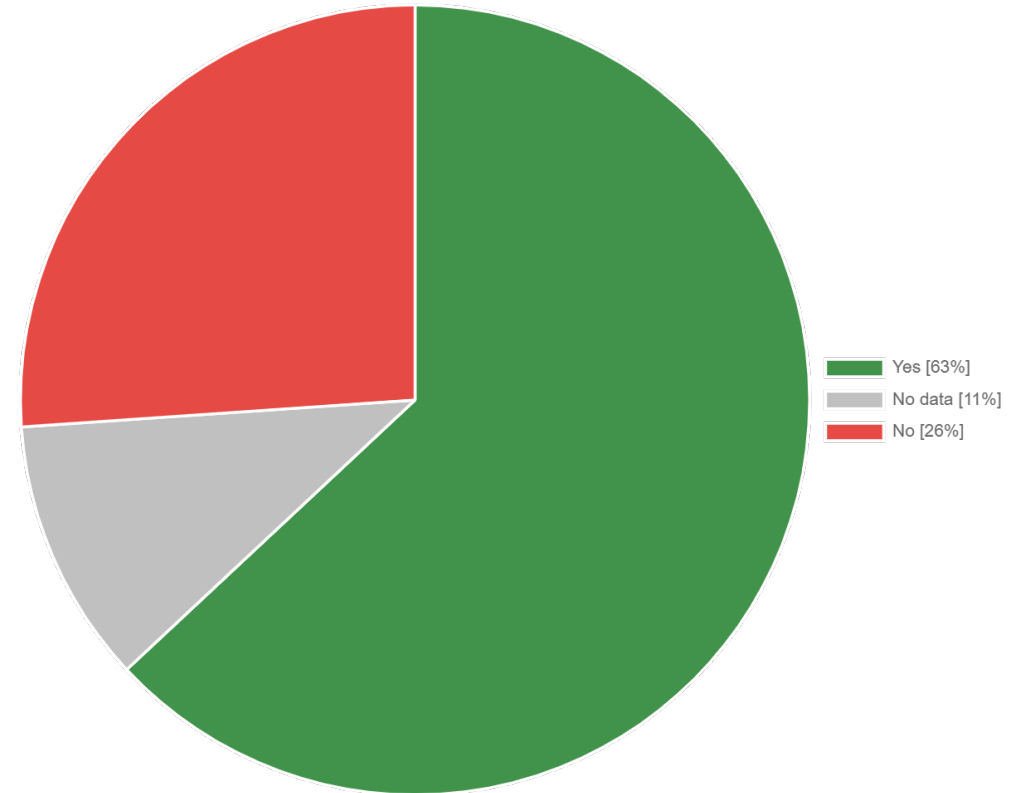
Jurisdictions that register only easements in land administration

- 46% of jurisdictions can view network graphically in the land administration
- 55% can at least in some cases trace network structure in the database
- 46% have networks registered by means of cadastral identifier
- 36% have RRRs and parties attached to network objects



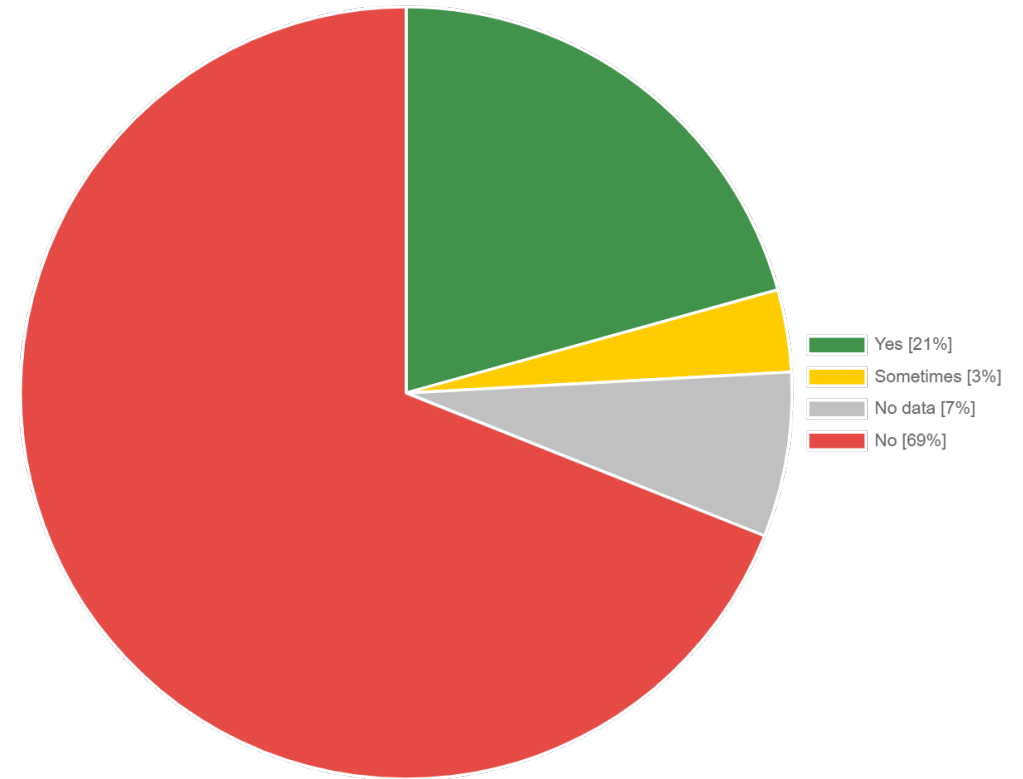
2.3. Does the jurisdiction have private networks? If so please, mention law and article(s).

- Out of 46 questioned jurisdictions 26 (63%) of them have private networks
- Some jurisdictions do not have specific laws associated

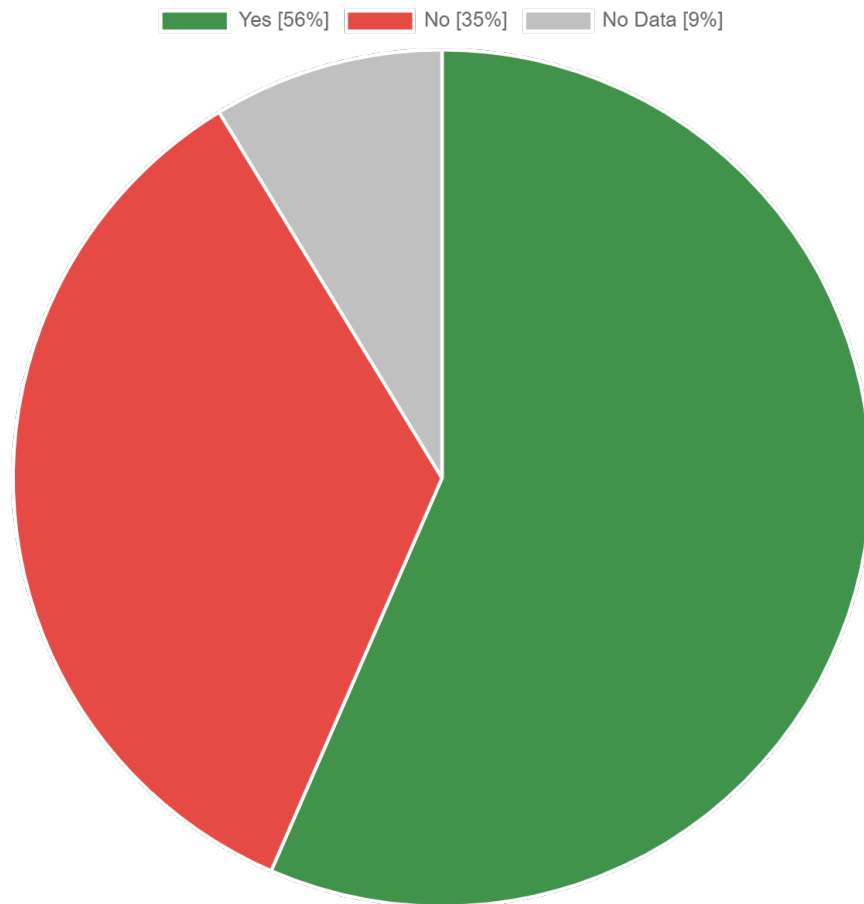


2.4. If so, are they registered as 3D property parcels (spatial units)?

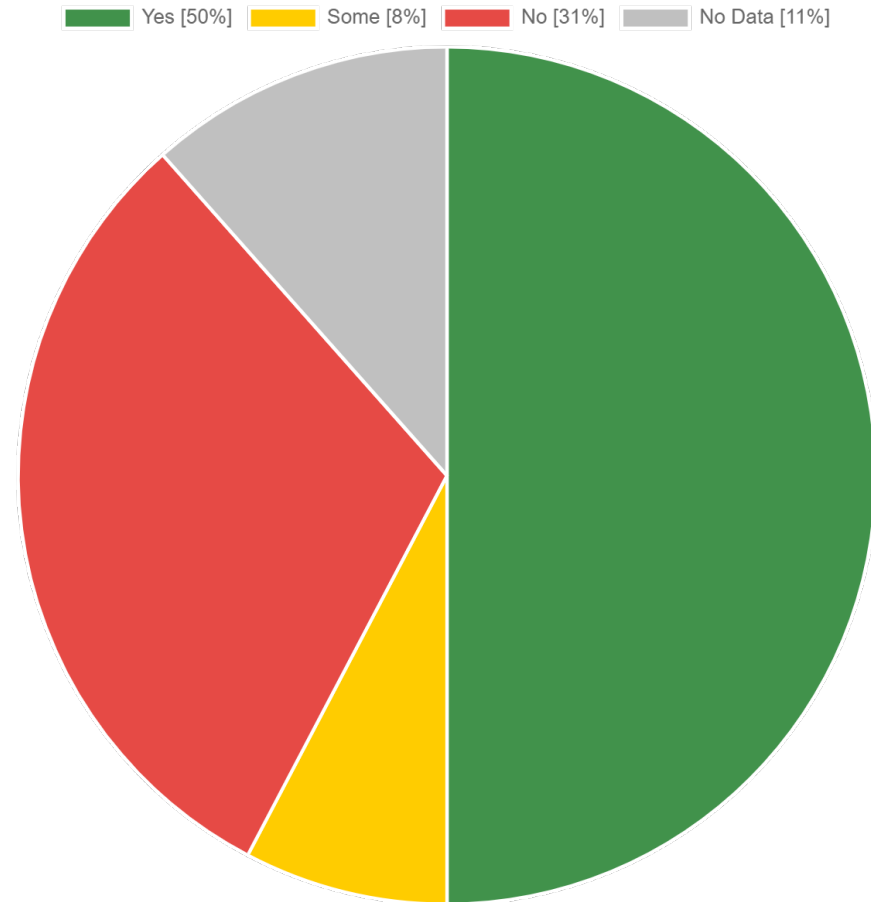
- Out of 29 jurisdictions that have private networks only 6 register them as 3D property parcels
- Austria and Quebec have textual descriptions
- Russia, Sweden and Macedonia had registered some larger construction objects



2.5. Is the text of relevant laws or regulations (question 2.3) available in original language?

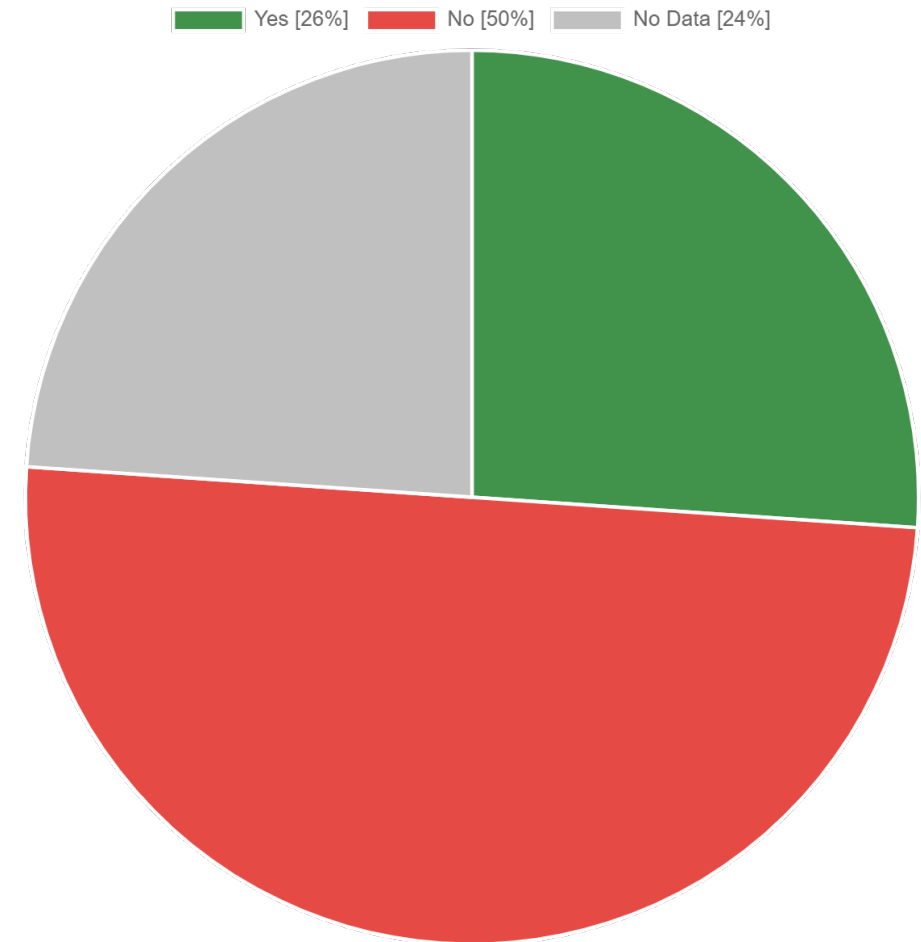


2.6. Is the text of laws and regulations (relevant part) available in English translation?



2.7. Do you have example descriptions of typical 3D parcels (spatial units) for networks; either 'prototype' or 'operational'?

- Out of 46 jurisdictions only 12 of them have some example descriptions of typical 3D parcels
- The Netherlands and Cyprus stated having example but not in 3D
- Singapore and Slovenia have prototype objects



2.8. If the network (legal) objects break at the surface parcel, how do you deal with intersecting networks or vertically parallel networks?

- most jurisdictions state that they treat networks as continuous and independent objects
- In most cases utility network objects are treated separately
- Some jurisdictions show networks and their overlaps in 2D with possibilities of manual checks



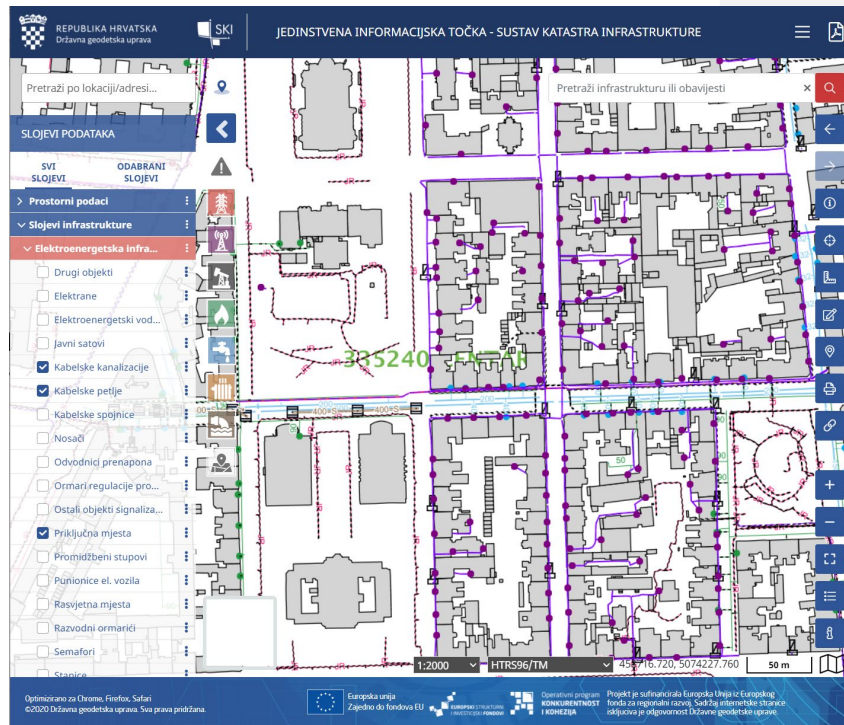
2.9. Any other geometric issues related to the registration of networks?

- Network objects are registered as 3D lines and points
- Complete geometry of networks is not registered in cadastral system
- Various data sources
- No institution mandated for coordination of overlapping and conflicting overlays



General approaches to utility registration

- National utility cadastres – usually established by regulations
- Other approaches – companies manage most of the data, local jurisdictions coordinates exchange of data
- In most cases only for technical purposes, construction and urban planning
- Rights on utility networks are rarely registered



Conclusion

- Various approaches
- Utility registration for safety and accident prevention
- Legal status of physical utility networks
- Shortcomings and improvements of questionnaire