

# Sendai city waterworks bureau

## Research for pipeline relaying in residential areas development

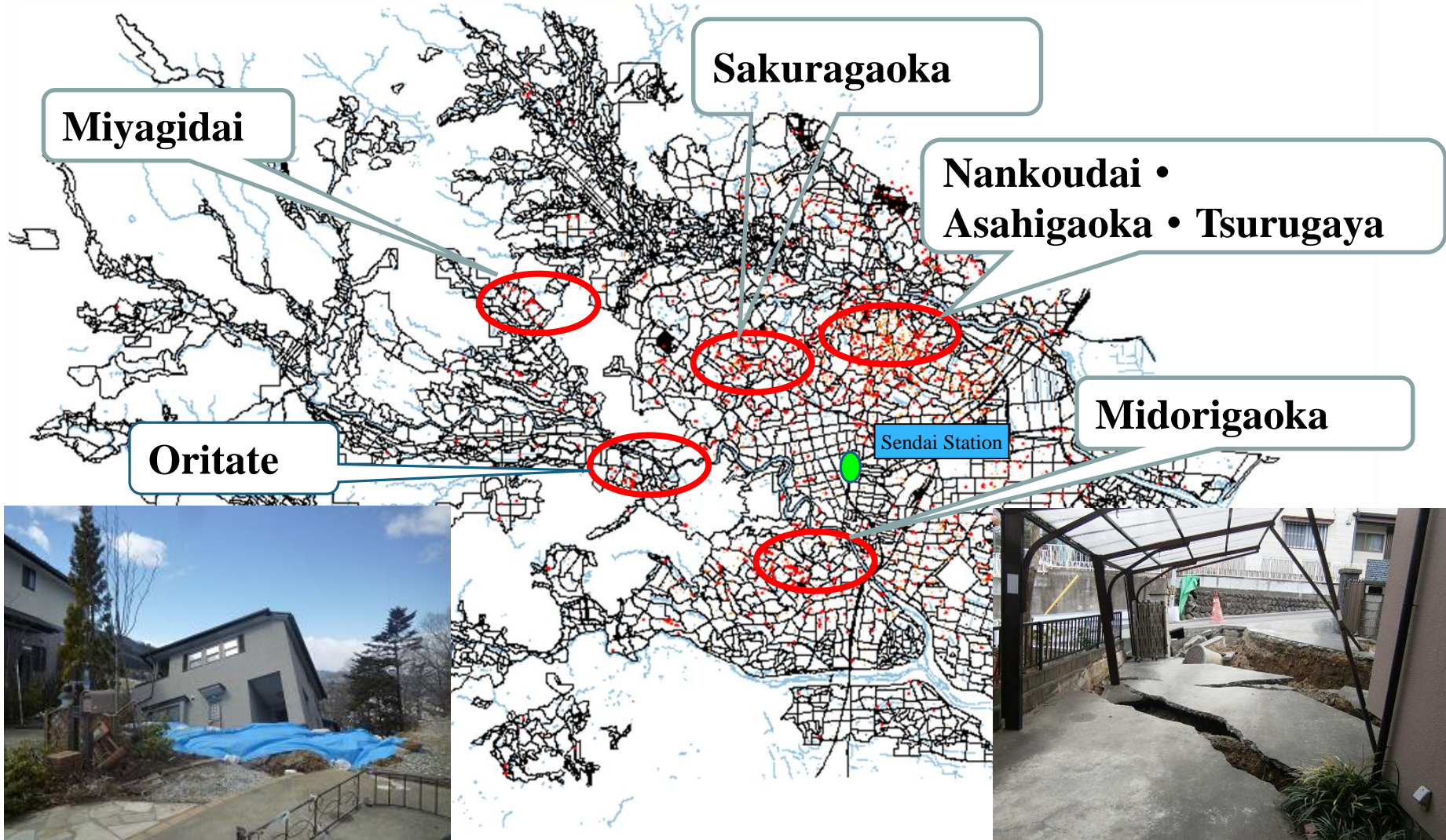
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**Facilities section**

**2014 US-JP Symposium and Workshop on International Research, Development, and  
Implementation in Water System for Disaster Prevention & Preparedness**

**January 28, 2015**



# Location of the pipeline breaks (distribution area)



# Pipeline renewal planning

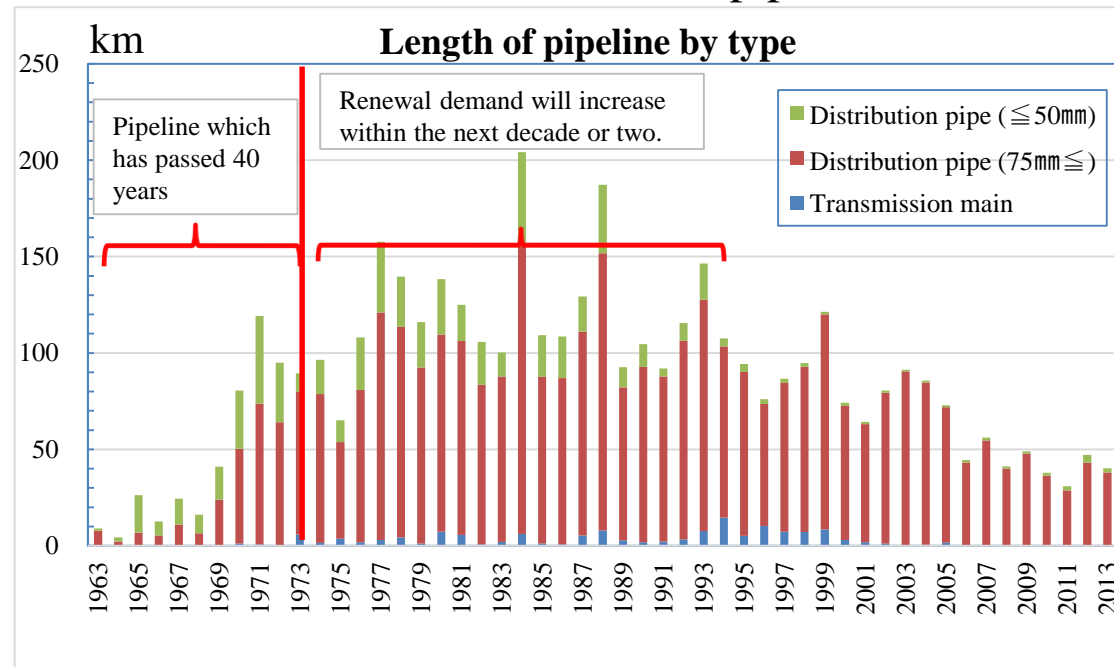
- Classification of the ER capacity on main pipeline

ER capability	Materials and joints
ER	DIP(S, SII, NS,GX, PII, F, KF), SP, SUS
Semi-ER	DIP(K)
Non ER	DIP(A,T),PVC, CIP, ACP

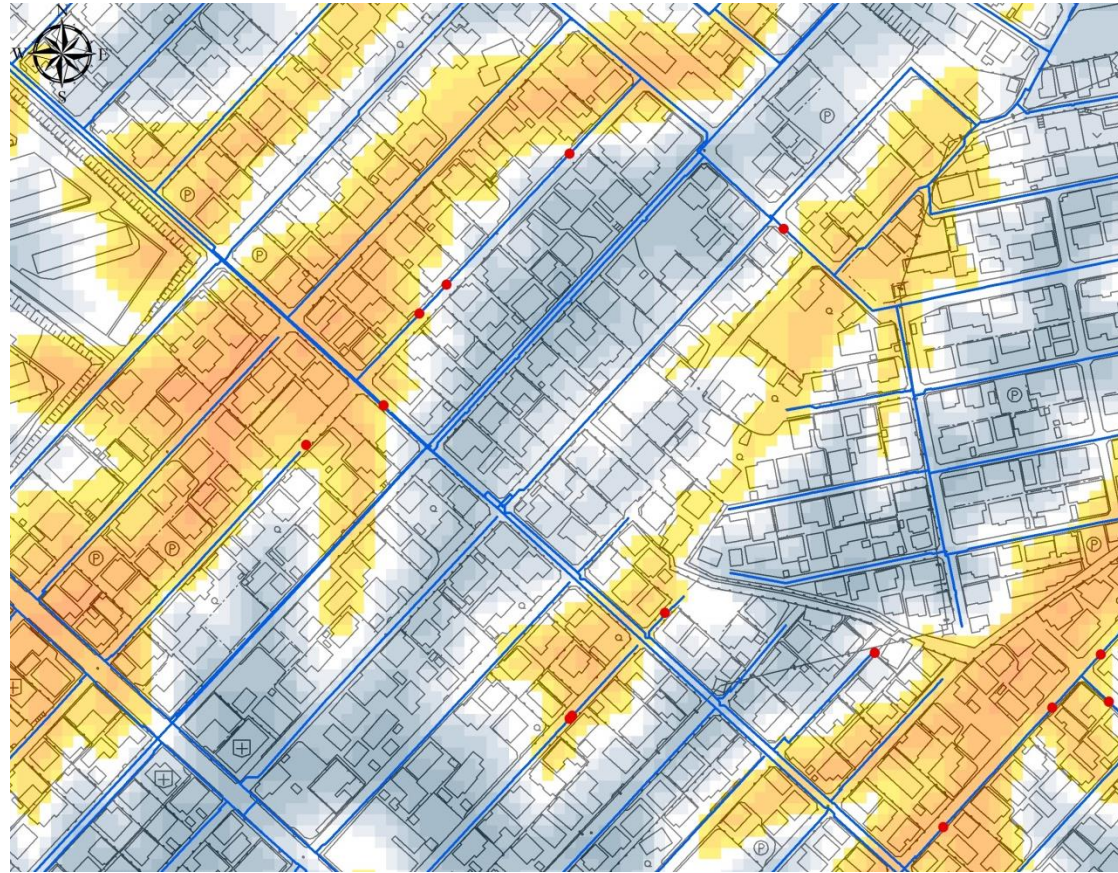
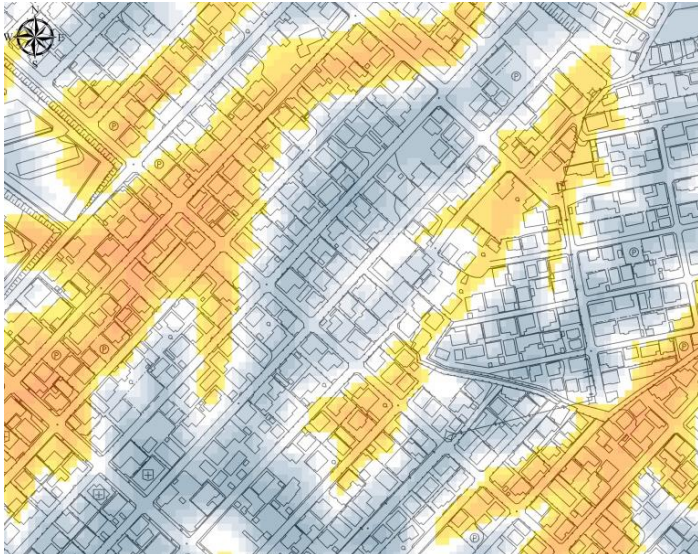
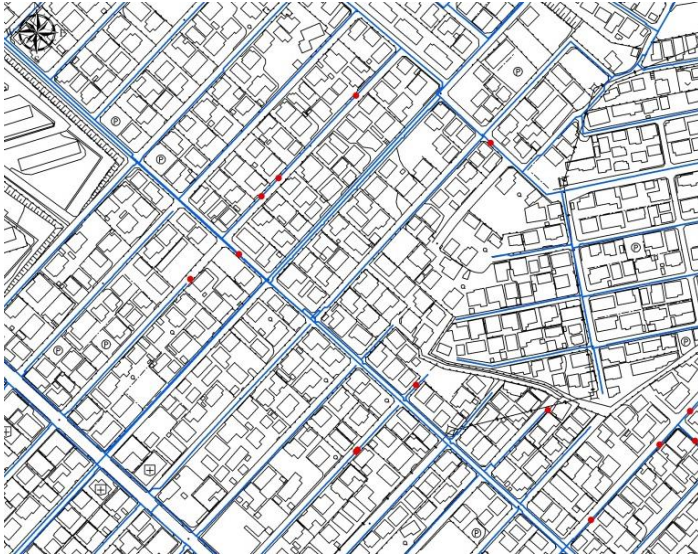
Broken in PVC



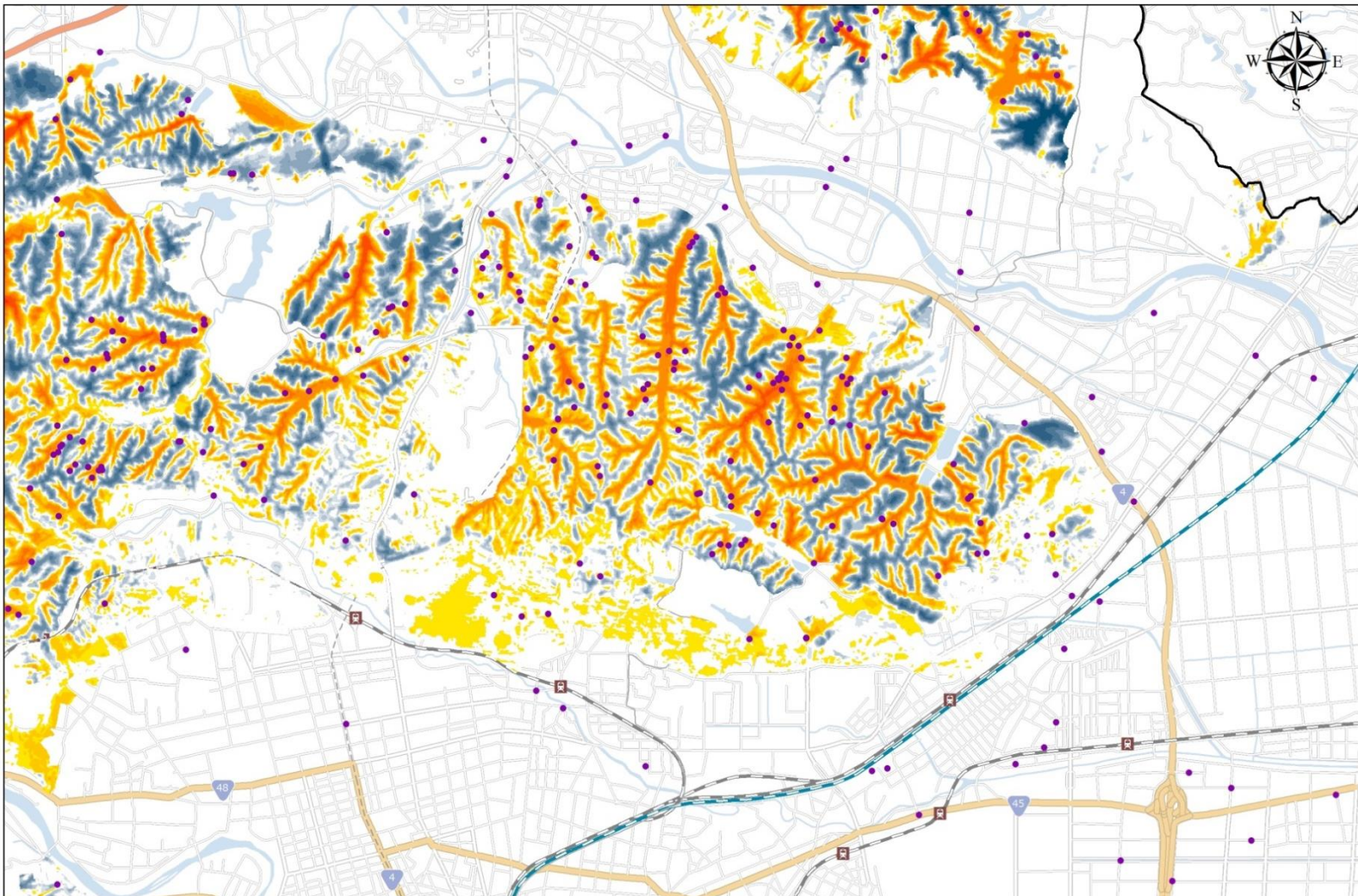
- Demands for the renewal of old pipelines



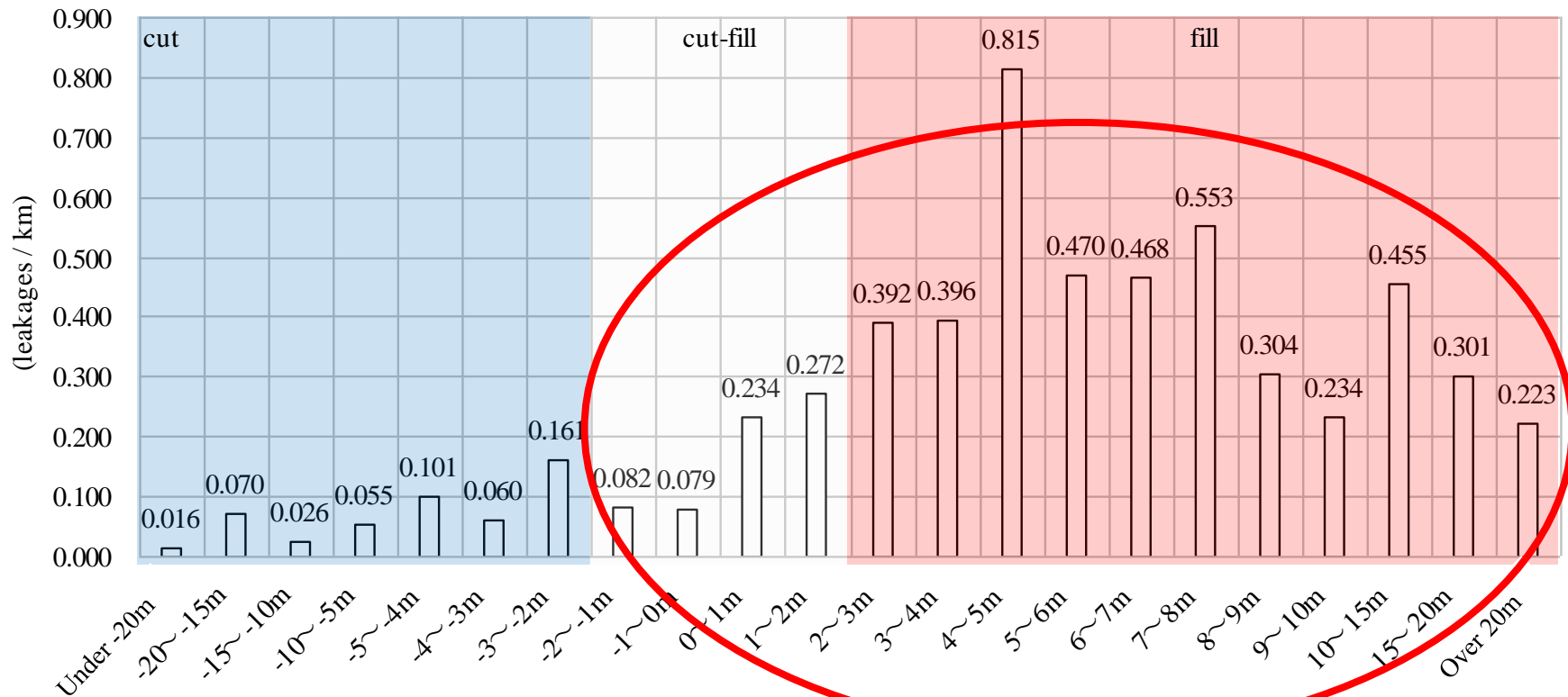
# Pipeline data and thicknesses of cut and fill



# Pipeline data and thicknesses of cut and fill



# Ratio of the leakages to the length of pipes



**Leakages are occurred in the fill and cut-fill more than cut.**

## Summary

- **Leakages concentrated in residential areas development.**
- **Leakages were occurred in the fill and cut-fill more than cut.**
- **We are researching other factors in leakages.**
- **We want to refer to this research for pipeline relaying.**

Thank you very much for your attention!