

LER Utility Cadastre System in a Danish context

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Undgå graveskader - Søg ledningsoplysninger

LER er et landsdækkende register over alle Danmarks forsyningsselskaber og i hvilke områder deres ledninger er placeret

LER er en platform til søgning af ledningsoplysninger i forbindelse med gravearbejde, planlægning eller almindelige undersøgelser. Alle er velkomne til at benytte LER til at søge ledningsoplysninger, men vær opmærksom på, at privatejede stikledninger ikke er en del af LER.

Hvis du skal grave, skal du have kendskab til placeringen af evt. ledninger i jorden, så du undgår graveskader. For at søge ledningsoplysninger skal du oprette en graveforespørgsel i LER. Ledningsejere har herefter 2 timer til at sende de ledningsoplysninger, de har i området for din graveforespørgsel. Du betaler et gebyr pr. m2, du forespørger på.

Læs mere om priser og betaling

Søg ledningsoplysninger

Hvis du søger ledningsoplysninger, skal du lave en graveforespørgsel i LER for at modtage oplysninger fra ledningsejerne. Ledningsejere har 2 timer til at udlevere de ledningsoplysninger, ledningsejeren har i området for din graveforespørgsel.

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Indberet interesseområder

Hvis du ejer forsyningsledninger, som er gravet ned i jorden eller havbunden, har du pligt til at indberette disse i LER. Dette gør du ved at oprette et interesseområde i LER.

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Søg samgravning

Hvis du vil søge om koordinering af gravearbejde med andre, kan du oprette en samgravningsannonce.

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**EUROPEAN DAYS
OF GEOMATICS**

What is LER?

- **Heading:** The Utility Owner Register (LER)
- **Key points:**
 - LER stands for “LedningsEjerRegistret” (Utility Owner Register).
 - LER is a nationwide, public register of all of Denmark's utility companies and other owners of buried wires, cables and pipes and in which geographical areas their cables are located
 - LER does not store the actual utility maps centrally but is a platform for facilitating utility inquiries
 - LER collects and distributes utility data from utility owners’ databases in a fully digital process
 - LER is regulated by law owned and operated by The Danish Agency for Climate Data – regulated by law.

Why do we have LER?

- **Heading:** Safety and uninterrupted daily life
- **Key points:**
 - Avoid excavation damage: The primary goal is to prevent excavators from striking utility lines – cost savings.
 - Protect human life: Striking a high-voltage power line or a gas pipe can be life-threatening for the excavator operator and people nearby.
 - Ensure service continuity: Severing a fiber-optic connection or a main water pipe can cripple entire local communities, hospitals, and businesses.
 - Component in Danish digital infrastructure: Supports data-driven models and business areas in society

How does it work?

- **Heading:** The excavation inquiry process
- **Key points:**
 - Legal requirement to utility owners: All companies owning utility lines are required to register with LER and immediately submit data in a specific digital format upon a request
 - Legal requirements before starting excavation: Excavation operators or contractors must submit a digital utility inquiry via LER.dk, by specifying a geographic excavation area (by a drawn polygon in a digital map)
 - Automated notification: The system automatically identifies which utility owners have cables in that specific area.

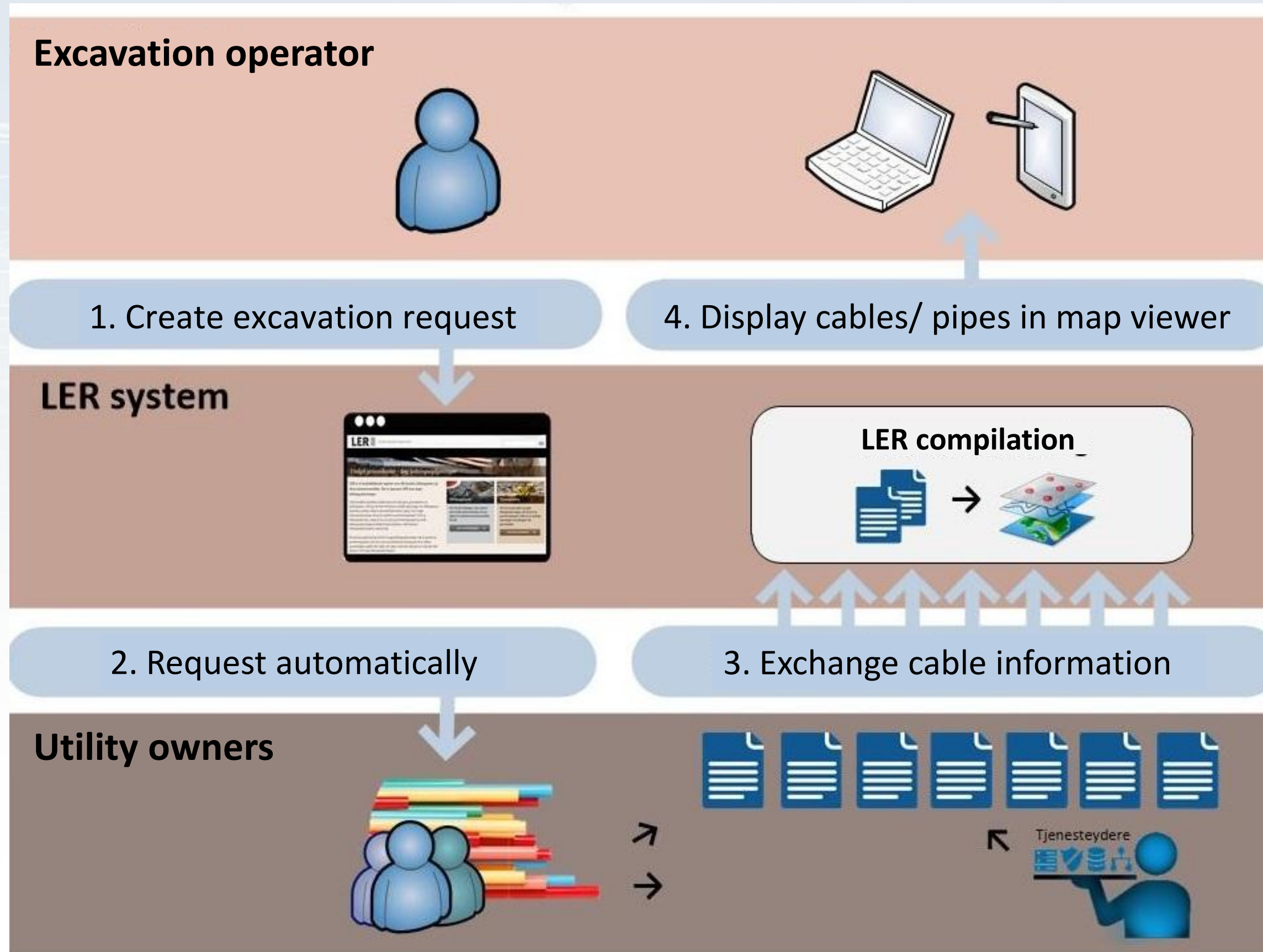
How does it work?

- **Heading:** The excavation inquiry process
- **Key points:**
 - Maximum 2-hour wait time (LER 2.0): Through full automation, the excavator receives data within 2 hours
 - Map view and download: A notification is sent when the data package is ready. The requestor can access the data directly in the LER Map Viewer or download it as a zip file for use in the field (tablet, GIS, GPS etc.). Utility data is delivered with cadastral maps and buildings as a background.

Why does it work?

- **Heading:** Multifaceted responsibility
- **Key points:**
 - Shared responsibility: LER only works because both parties comply with the law – one provides accurate data, while the other checks the system before digging.
 - Private consulting companies play a central role: Provides and offers services supporting the operation and functionality of LER:
 - For utility owners – data collection, data management and data distribution to LER
 - For contractors – utility inquiries and data conversion for local CAD-, GNSS-, and machine control systems

LER in a nutshell



Diving into requested topics and questions

1 History

- **Heading:** From paper maps to LER 2.0
- **Key points:**
 - 1980-2005: A manual process where excavators and consultants had to make multiple calls and wait days for physical drawings.
 - 2005: LER established by law as a central contact registry.
 - 2018: Legal requirement – all utility data shall be digital and formatted using a standard XML schema including both geometry and attributes.
 - 2023: Rollout of LER 2.0 – transforming the registry into a fully automated system. Defined and regulated by law.

2 Organizations and roles

- **Heading:** The three key players behind the system
- **Key points:**
 - The Authority: The Danish Agency for Climate Data manages the registry, the legislation, and the digital platform.
 - Utility owners: Utility companies required to
 - Register contact information, area of interest in LER and type of cable
 - Collect and manage own utility network data in their own digital systems
 - Provide utility data to LER in response to an inquiry
 - Excavators: Contractors, landscapers, and companies required to submit an inquiry before commencing excavation work. The fee for an inquiry is DKK 0.015 per square metre.

3 Utility data in LER

- **Heading:** LER compilation
- **Key points:**
 - Standardized formats: Data is exchanged in uniform digital formats (GML/vector data) to allow for automatic aggregation.
 - Coordinate systems – 3D-data:
 - Horizontal coordinate systems – ETRS89 / UTM zone 32N or DKTM1-4
 - Vertical coordinate systems – DVR90 (Danish Vertical Reference 1990)
 - Five specific accuracy classes: Deviation of up to 0.25 meters, up to 0.50 meters, up to 1.00 meter, up to 2.00 meters and more than 2.00 meters
 - Mandatory attributes: Operational status, year of establishment, and hazard class

4 Data Quality

- **Heading:** How accurate is the utility data?
- **Key points:**
 - Responsibility: Utility owners are responsible for the accuracy of utility data.
 - Old utility line data: No accuracy requirements. Actual accuracy depends on the registration method – it can vary from a few centimeters to many meters.
 - New utility line data: LER2.0 requires a precision less than 0.5 meters. Many utility owners survey their utility lines with greater precision, typically using GNSS surveying.

5 Data updates

- **Headline:** Real-time data and fast delivery
- **Key points:**
 - As-built documentation: Requirement for precise recording of newly installed utility lines.
 - Continuous updates: Utility owners are required to constantly and as quick as possible to update their maps when new cables are laid and update one's "area of interest" in LER
 - 2-hour response time: Utility information must be provided automatically within 2 hours on business days.

6 Integration with other geodata / data

- **Heading:** LER in the national data landscape – digital infrastructure model
- **Key points:**
 - Joint public sector base data: Linked to Denmark's administrative registers (e.g., "Datafordeleren" = Public Datadistributer).
 - Cadastral and other public official maps: Utility network maps are overlaid on official background maps showing property boundaries and roads.
 - CVR Register (The Central Business Register – ID): Master data on companies and contractors is retrieved directly from this source.

7 Data Security / Openness

- **Heading:** The balance between protection and transparency
- **Key points:**
 - Critical infrastructure: Precise utility maps – showing gas, water, and electricity lines, for example – constitute sensitive data (risk of terrorism, sabotage or hybrid attack).
 - Controlled access: Anonymous "snooping" is not possible – access requires MitID (digital) authentication and a legitimate reason (an excavation inquiry).
 - Statistical transparency: LER shares anonymized aggregate data and statistics on excavation damage for the public good – estimated to 1.24 billion kroner annual

8 How is the data used?

- **Heading:** From computer screen to excavator and computer aided design
- **Key points:**
 - Digital map viewer: The excavator operator receives a consolidated file that can be opened on a tablet or PC in the field.
 - GPS guidance: Modern contractors can load LER data directly into the machine control system.
 - Planning tool: Project owners and consultants use the data early in the process to design new infrastructure, urban development, planning and design of large residential and commercial developments / buildings

9 Societal benefit

- **Heading:** A billion kroner gain for Denmark in the long run
- **Key points:**
 - Estimated annual economical gain: Appr. one hundred million kroner
 - Fewer outages: Ensures uninterrupted power, water, internet etc. for citizens, companies, public institutions, hospitals etc.
 - Economic savings: Reduces excavation damage, which has historically cost society hundreds of millions annually.
 - Excavation coordination: Enables "joint excavation" (by apply for coordination of excavation work) preventing the same road from being dug up by three different companies in the same month.

10 Challenges with LER

- **Heading:** Where do the pain points remain?
- **Key points:**
 - Legacy issues: Older underground utility lines are often poorly or inaccurately mapped (dating from the pre-GPS era).
 - Private service lines: LER typically does not cover the smaller lines running from the road to the house itself.
 - IT support: Small, local utility providers (e.g., smaller private waterworks) may struggle to meet demanding IT requirements.