



NLS
NATIONAL
LAND SURVEY
OF FINLAND

Finnish experiences of providing HY theme services

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In this presentation:

What hydrographic data sets are like in Finland

How the services are produced today

How data specification was done

How the services are used and what are Finnish experiences on these services



Hydrographic theme in Finland

- 3 data producers and 4 data sets on National data list
- Combined Data Specification



National Inspire data set list

INSPIRE-direktiivin toimeenpano

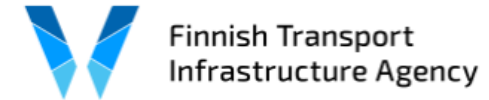
Kansallinen luettelo INSPIRE-direktiivin piiriin kuuluvista paikkatietoaineistoista.
Hyväksytty Paikkatietoasian neuvottelukunnan kokouksessa 1.9.2021

Aineiston nimi on *kursiivilla* silloin kun se toistuu eli esiintyy taulukossa jo aiemmin.

Liite	Paikkatietoryhmä	Paikkatietoaineisto	Organisaatio
I	3. Paikannimet	Nimistörekisteri	MML
I	4. Hallinnolliset yksiköt	Aluevesien rajat	Traficom
I	4. Hallinnolliset yksiköt	Kuntajako	MML
I	5. Osoitteet	Osoitteet	Kunnat
I	5. Osoitteet	Väestötietojärjestelmän rakennusten ja huoneistojen osoitteet	DVV
I	6. Kiinteistöt	Kiinteistörekisterikartta	MML&Kunnat
I	7. Liikenneverkot	Vesiväylät (väylät ja turvalaitteet)	Väylä
I	7. Liikenneverkot	Rataverkko	Väylä
I	7. Liikenneverkot	Tierekisteri	Väylä
I	7. Liikenneverkot	Ilmaliikenneverkko	Traficom
I	7. Liikenneverkot	Digiroad	Väylä
I	7. Liikenneverkot	Maastotietokanta	MML
I	8. Hydrografia	Kanavien sulut	Väylä
I	8. Hydrografia	Valuma-aluejako	SYKE
I	8. Hydrografia	Uomaverkosto	SYKE
I	8. Hydrografia	<i>Maastotietokanta</i>	MML
I	9. Suojellut alueet	Kylä- ja asuinalueet	Kunnat
I	9. Suojellut alueet	Muinaisjäännökset	MV
I	9. Suojellut alueet	Valtakunnallisesti merkittävät rakennetut kulttuuriympäristöt	MV
I	9. Suojellut alueet	Suojelurakennusperintö	MV
I	9. Suojellut alueet	Luonnonsuojelu- ja erämaa-alueet	SYKE
I	9. Suojellut alueet	Natura 2000	SYKE

Data producers who have hydrographic data

- National Land Survey of Finland
 - Terrain database
- Finnish Transport Infrastructure Agency
 - Locks
- Finnish Environment Institute
 - Catchment areas
 - River network



NLS, Terrain database

Hydrographic theme in terrain database

Feature classes are:

- Standing waters (lakes, sea area)
- Flowing waters, watercourses
- Rapids
- Shoreline constructions
- Land-water boundary
- Dam or weir



NLS, Terrain database

Urls:

<https://inspire-wfs.maanmittauslaitos.fi/inspire-wfs/hy?request=GetCapabilities&service=wfs>

<https://inspire-wms.maanmittauslaitos.fi/inspire-wms/HY/ows?service=wms&request=GetCapabilities>

Metadata for services:

<https://www.paikkatietohakemisto.fi/geonetwork/srv/fin/catalog.se/arch#/metadata/312b1550-2d5a-4d57-b033-932f4a8d6bd8>

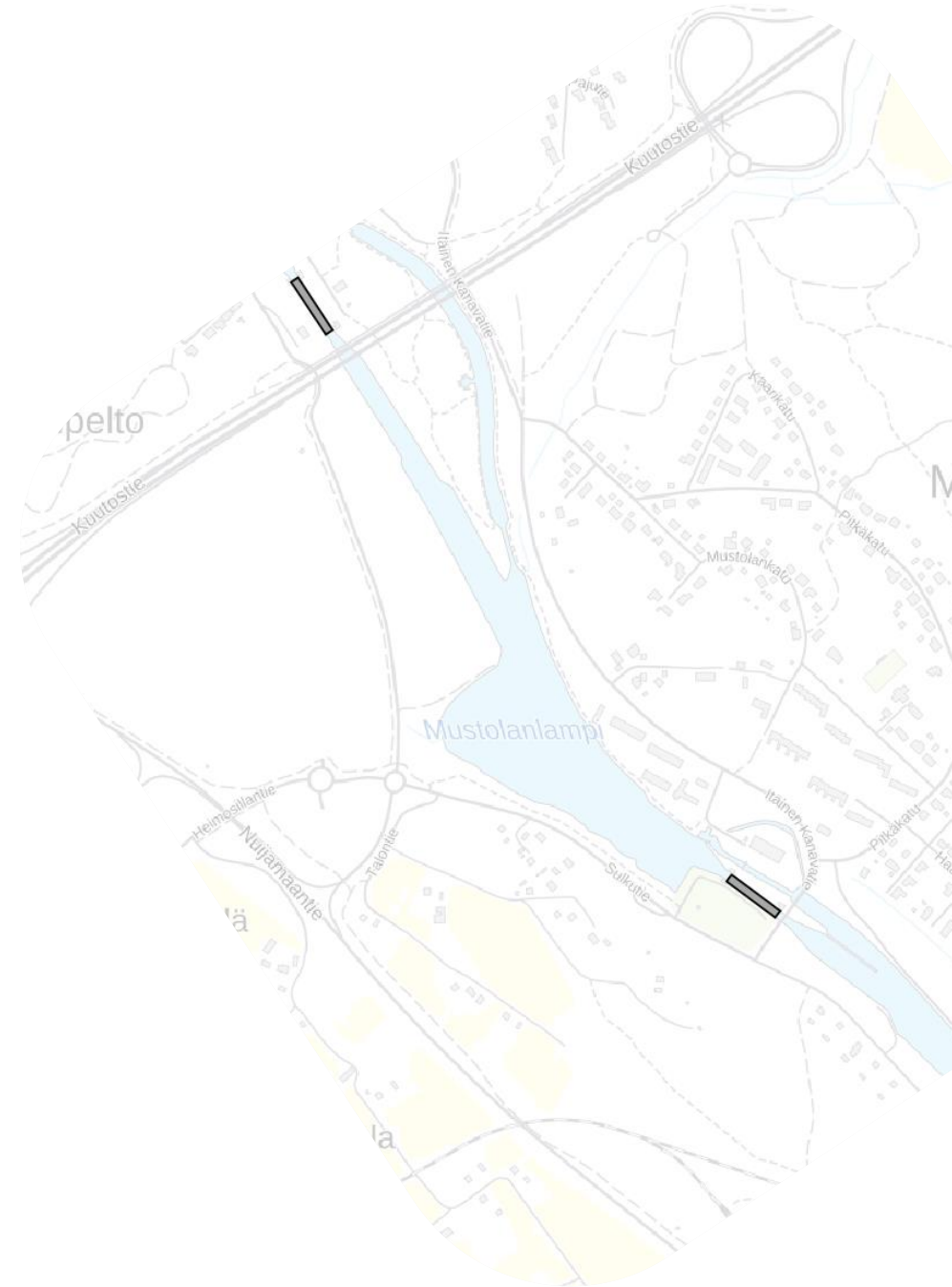
<https://www.paikkatietohakemisto.fi/geonetwork/srv/fin/catalog.se/arch#/metadata/d35199cd-b3b2-4097-aa3d-c38919492403>



Finnish Transport Infrastructure Agency

Locks

(=An enclosure with a pair or series of gates used for raising or lowering vessels as they pass from one water level to another.)



Data sets: Finnish Transport Infrastructure Agency

Urls:

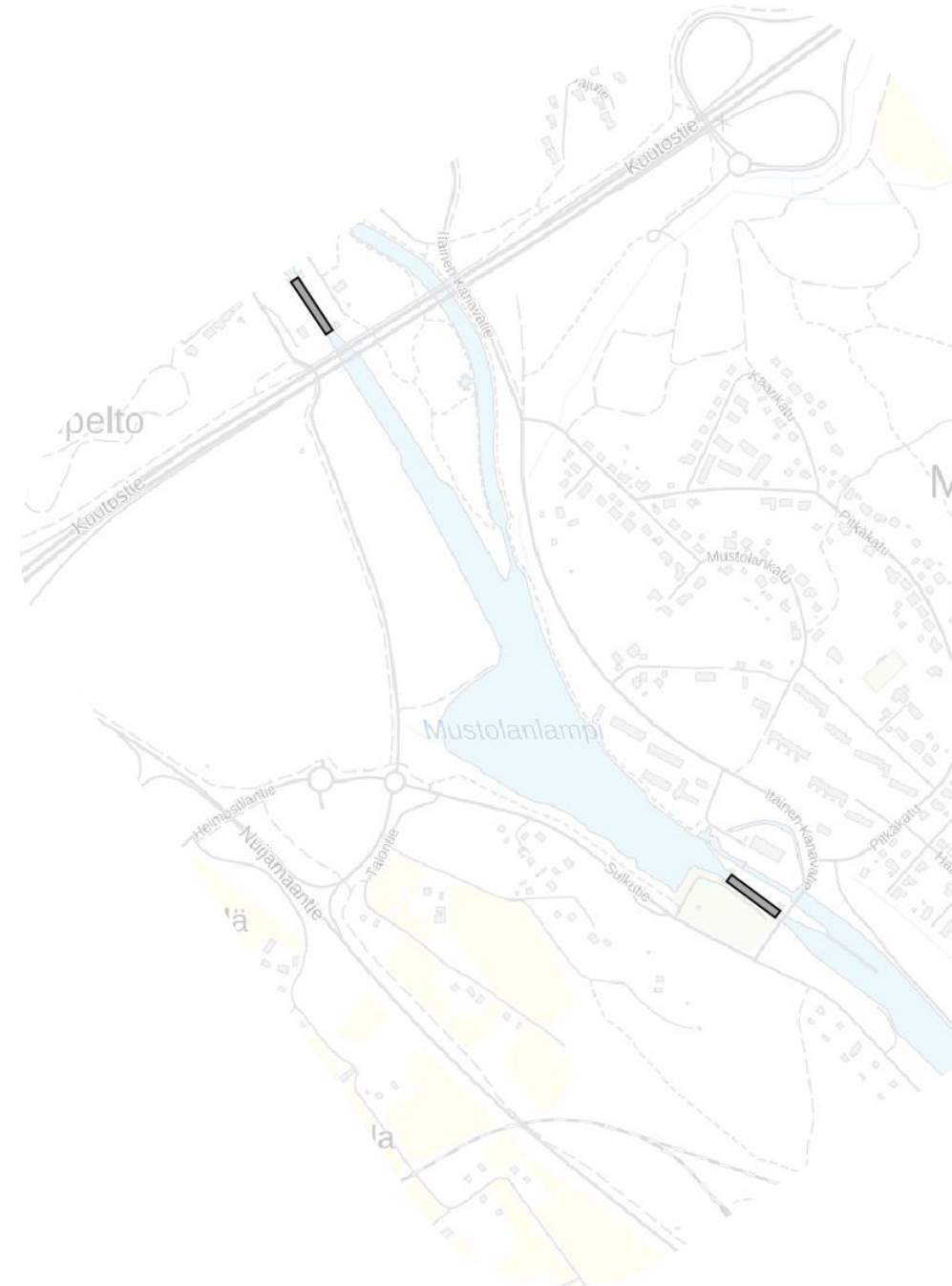
<https://avoinapi.vaylapilvi.fi/inspirepalvelu/hy-p/wms?request=getcapabilities>

<https://avoinapi.vaylapilvi.fi/inspirepalvelu/hy-p/wfs?request=getcapabilities>

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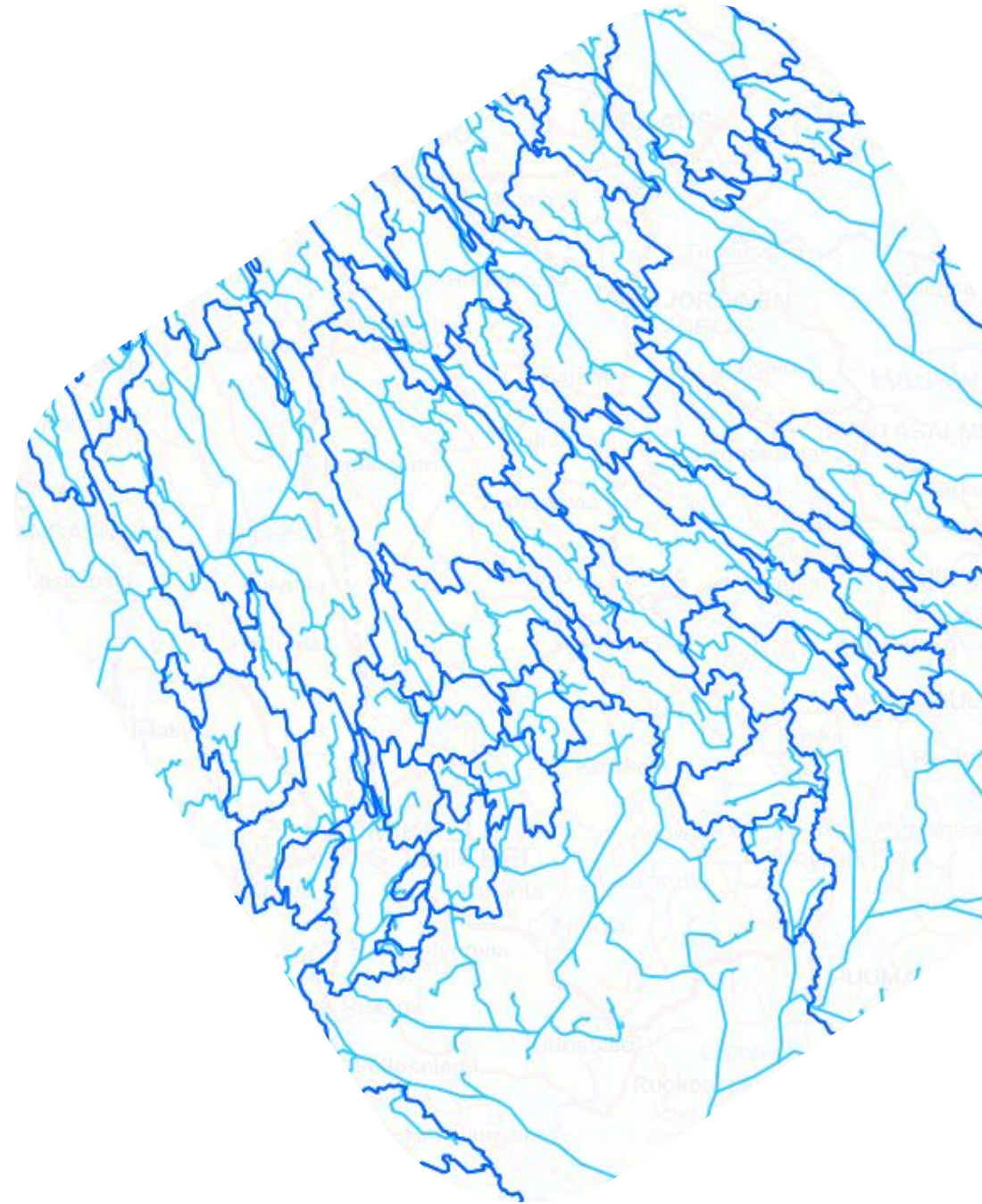
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<https://www.paikkatietohakemisto.fi/geonetwork/srv/fin/catalog.search#/metadata/d50fa3d5-76ba-40bc-86dd-1eb4486c9108>



Data sets: Finnish Environment Institute

- Catchment areas
- River network



Data sets: Finnish Environment Institute

Urls:

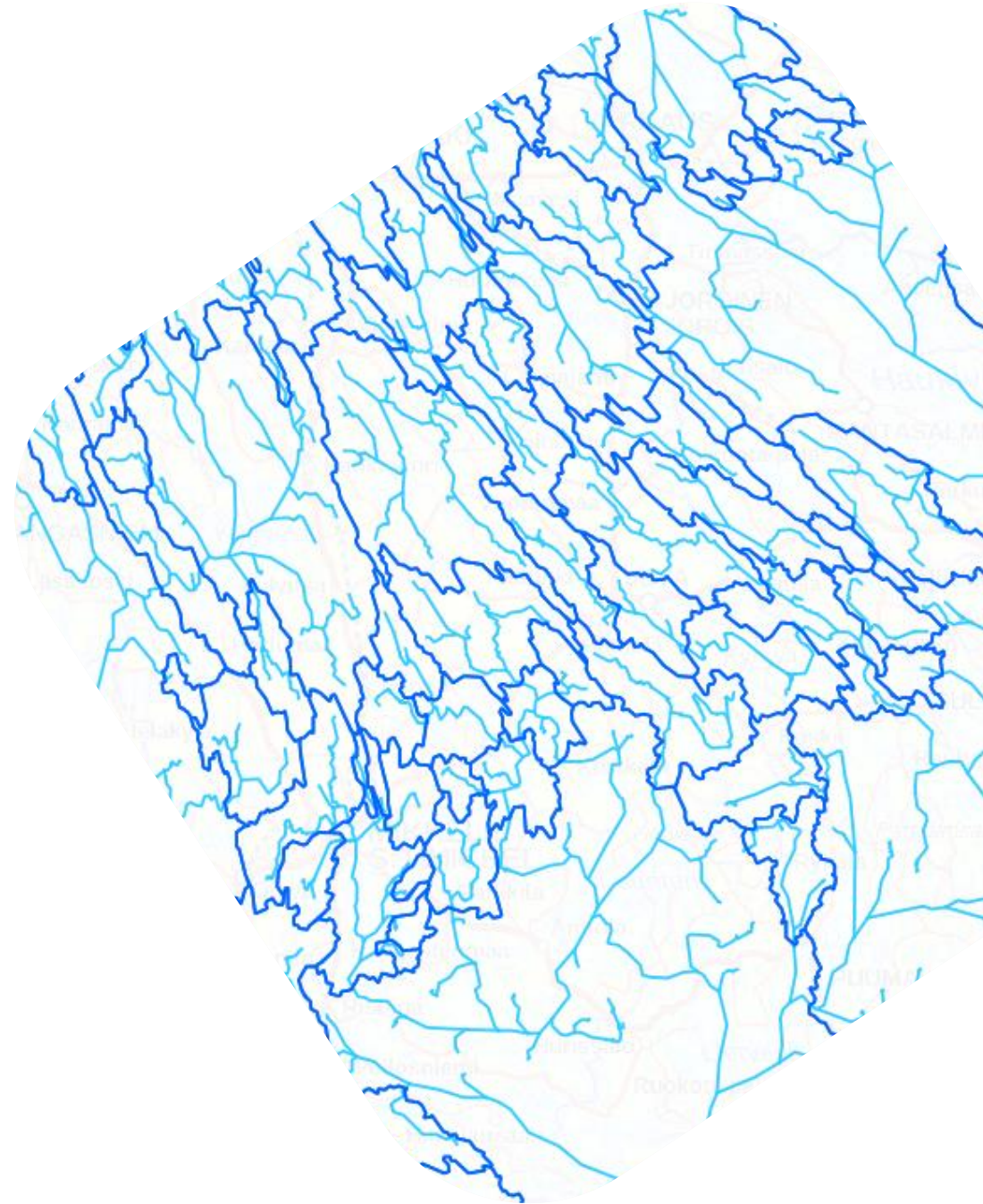
https://paikkatiedot.ymparisto.fi/geoserver/inspire_hy/wms?service=WMS&request=GetCapabilities

<https://www.d3.ymparisto.fi/d3/INSPIREAtom/inspireatomgml.xml>

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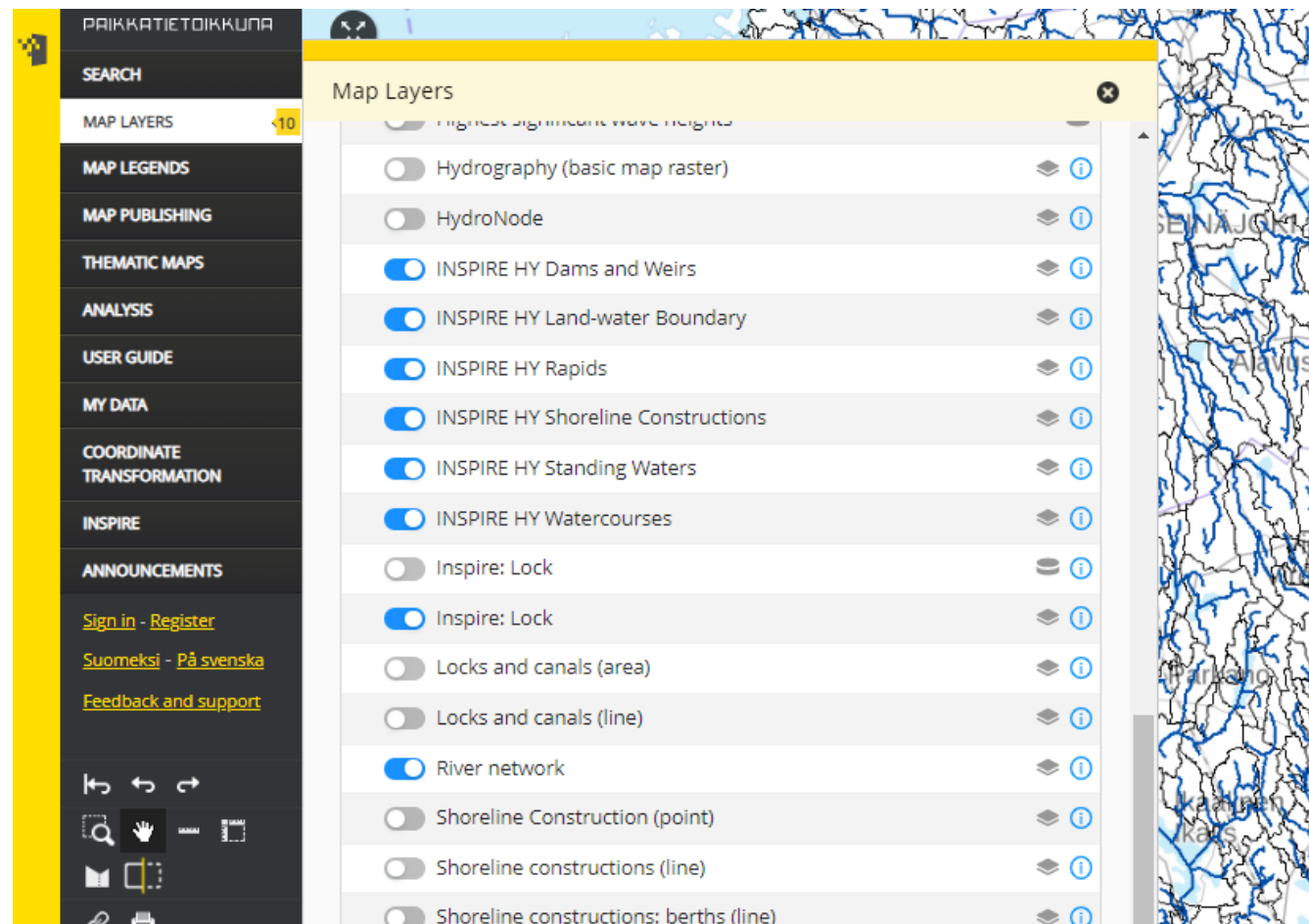
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<https://www.paikkatietohakemisto.fi/geonetwork/srv/fin/catalog.search#/metadata/%7B615B1B36-3140-4A6A-BFAF-1BF94F8F8D6B%7D>



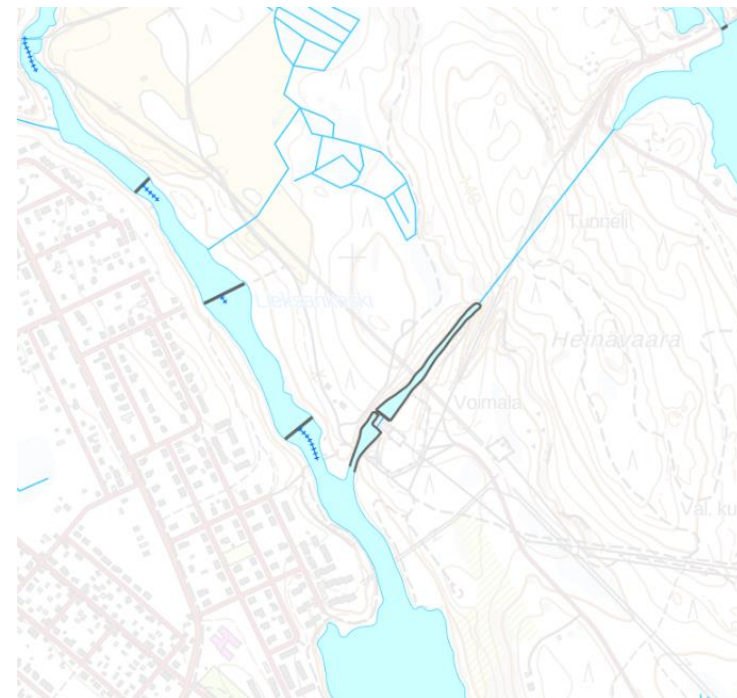
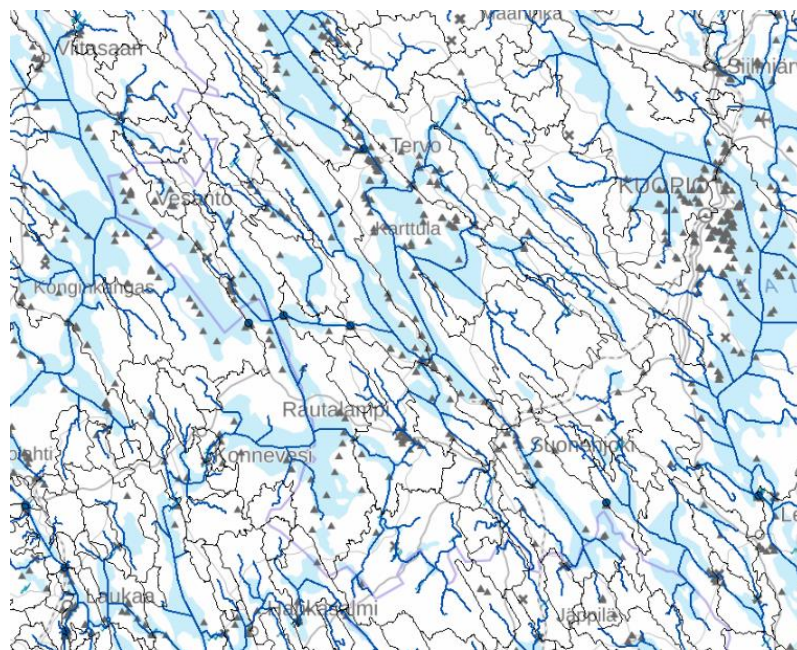
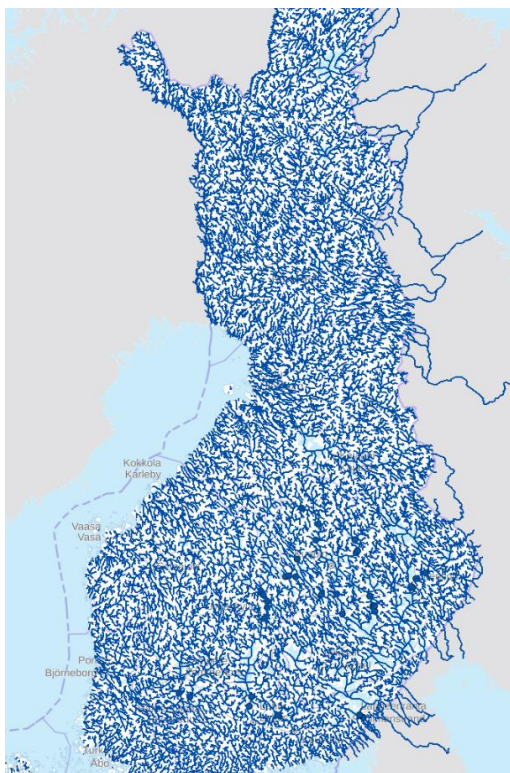
All Finnish hydrographic data sets together

National Geoportal "[Paikkatietoikkuna](#)"
(=GIS Data Window")



All Finnish hydrographic data sets together

Hydrographic theme's wms-services on the same map: <https://kartta.paikkatietoikkuna.fi/?lang=fi&uuid=9c9a6fb7-ec4e-4f19-b2b8-620116be1f70>



History...

Hydrography theme's national data specification has been done in 2010 and updated in 2016 (according to version https://inspire.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_HY_v3.1.pdf).

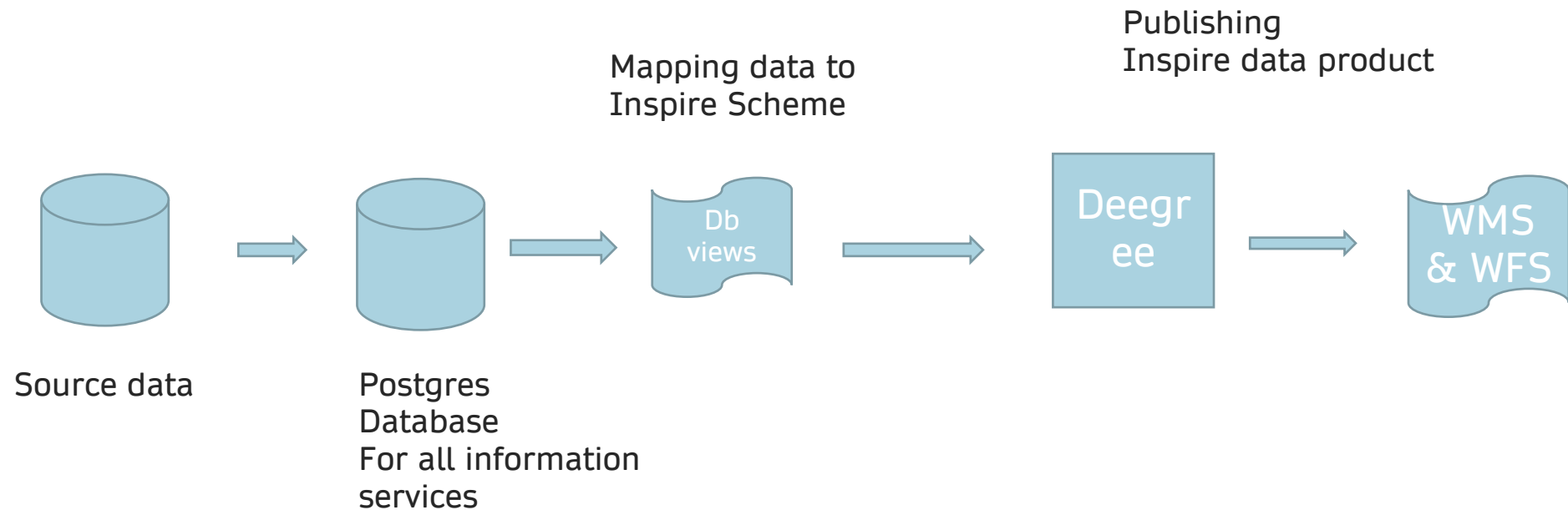
- in co-operation with 3 organisations
- afterwards there have been changes in responsible authorities

Mapping national datamodels to Inspire's

Application Schema 'Hydro - Physical Waters' (version 4.0rc1)				Application Schema 'maastotietokanta'			
Crossing	SOURCE (DFDD)	hydrold	An identifier that is used to identify the object.		tietokanta sisältää tietoja joitakin kahlaamoja, jotka vastaavat kohdetta.		
		relatedHydroObject	A related hydrographic object representing the object.				
		beginLifespanVersion	Date and time at which the object was created.				
		condition	The state of planning, construction, repair, etc.				
		endLifespanVersion	Date and time at which the object was last updated.				
		geometry	The geometry of the object.				
		inspireId	External object identifier of the object.				
		levelOfDetail	Resolution, expressed as the inverse of an integer.				
WidthRange	The range of a watercourse's horizontal width along its length.	lower	Lower bound of width.	Virtavesi, alle 2m (36311). Virtavesi 2-5m (36312)	Viivamaisille virtavesille tieto on saatavilla Maastotietokannassa - voidaan johtaa kohdeluokasta.		
		upper	Upper bound of width.				
Crossing	A man-made object allowing the passage of water above or below an obstacle. EXAMPLE: Aqueduct, bridge, culvert, siphon.	geographicalName	A geographical name that is used to identify the object.	Ei vastaavuutta	Kohteita ei ole maastotietokannassa. Lähimpänä on Uittoränni (39000), joka on "Vesiuomaan rakennettu kouru tai tunneli, jota pitkin puut uitetaan esimerkiksi kivikkoisen tai jyrkän kosken ohi tai voimalaitoksen sivutse."		
		hydrold	An identifier that is used to identify the object.				
		relatedHydroObject	A related hydrographic object representing the object.				
		beginLifespanVersion	Date and time at which the object was created.				
		condition	The state of planning, construction, repair, etc.				
		endLifespanVersion	Date and time at which the object was last updated.				
		geometry	The geometry of the object.				
		inspireId	External object identifier of the object.				
		levelOfDetail	Resolution, expressed as the inverse of an integer.				
		type	The type of physical process.				
ShorelineConstruction	An artificial structure attached to land bordering a body of water and fixed in position. SOURCE (DFDD): NOTE 1 It is usually fixed to the waterbody bottom (for example: a mole) but may occasionally be fixed in position (for example: attached to the shore at one end and held between pilings at the other) but floating. Shoreline constructions are normally used for berthing and/or protection. NOTE 2 Includes breakwater, groin, wharf, etc.	geographicalName	A geographical name that is used to identify the object.	Aallonmurtaja (44100), Pistolaituri, alle 5 m (45111) Pistolaituri, väh. 5 m (45112). Keinotekoinen rantaviiva (30100)	Yli 5 m leveät aallonmurtajat sisältävät kohteeseen Keinotekoinen rantaviiva. Aallonmurtajista ja pistolaitureista on mukana myös merennannalla sijaitsevia kohteita. Keinotekoisista rantaviivoista otetaan mukaan vain ne, joiden kartografinen luokka on "järvesi" (36212) tai "virtavesialue" (36213) tai "merivesi" (36211) (Keinotekoinen rantaviiva saattaa sisältää myös joitain kohteita, jotka eivät ole aallonmurtajia).		
		hydrold	An identifier that is used to identify the object.				
		relatedHydroObject	A related hydrographic object representing the object.				
		beginLifespanVersion	Date and time at which the object was created.				
		condition	The state of planning, construction, repair, etc.				
		endLifespanVersion	Date and time at which the object was last updated.				
		geometry	The geometry of the object.				
		inspireId	External object identifier of the object.				
RiverBasin	The area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes.	geographicalName	A geographical name that is used to identify the object.	Ei vastaavuutta	Kohdetyyppi on SYKE:n vastuulla.		
		hydrold	An identifier that is used to identify the object.				

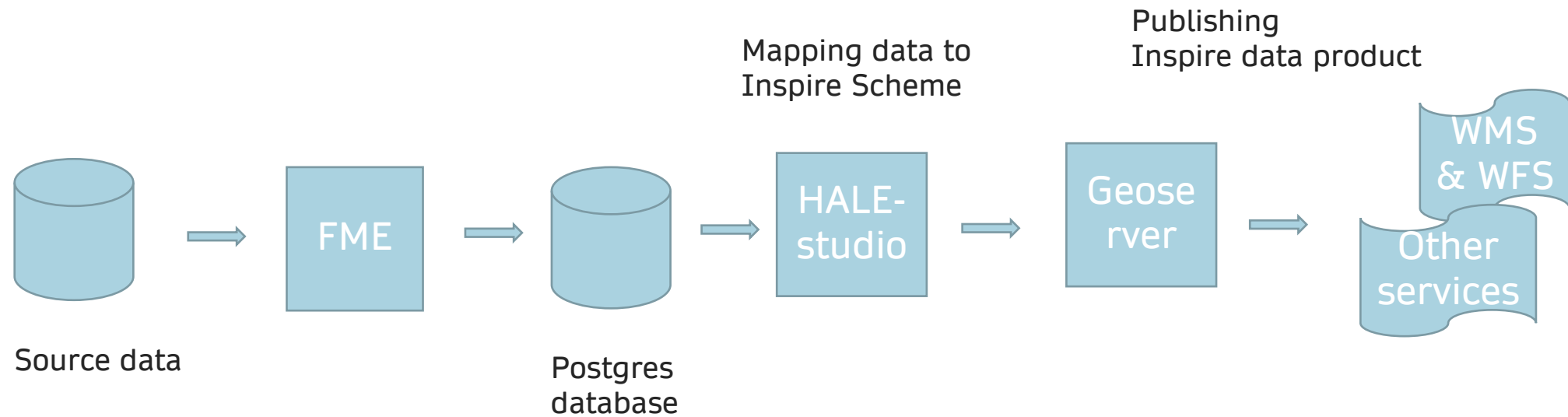
Technical procedures for publishing:

National Land Survey:



Technical procedure for publishing:

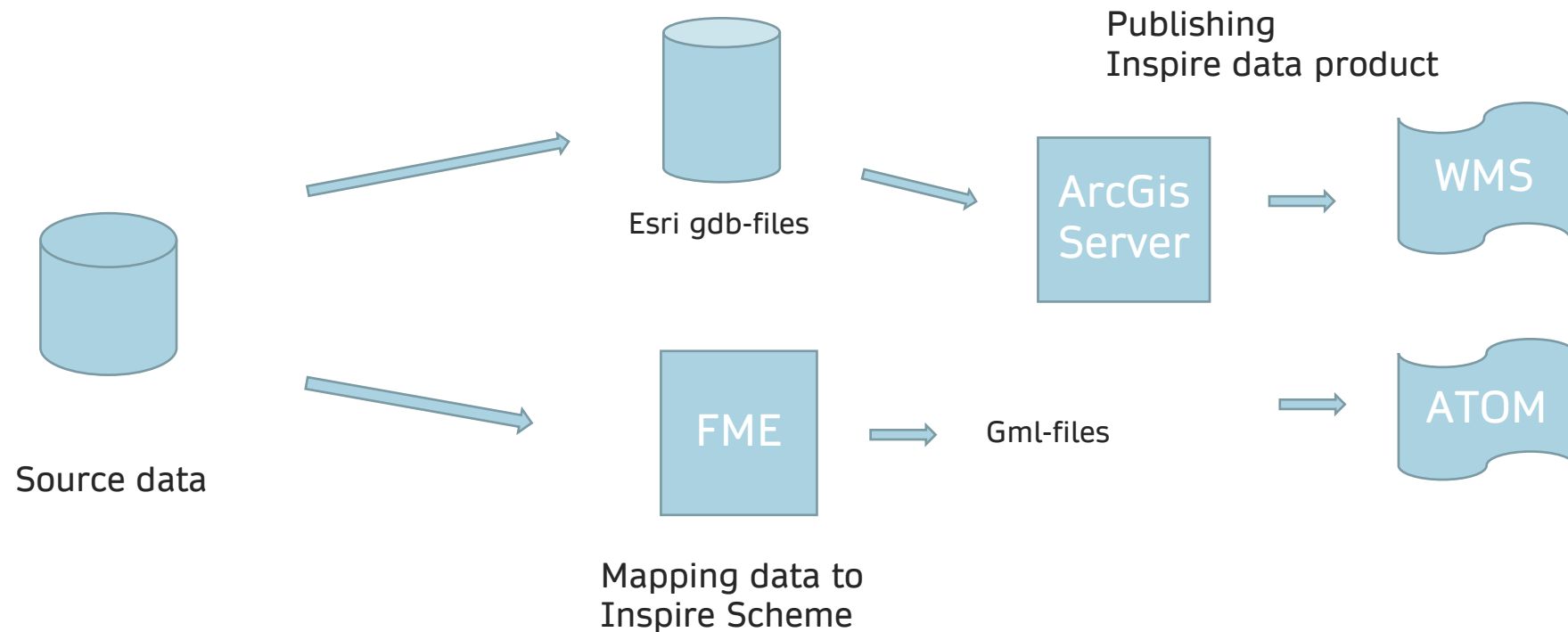
Finnish Transport Infrastructure Agency:



Source: Ms Jenni Silvennoinen, Master thesis: INSPIRE themes that are on Finnish Transport Infrastructure Agency's responsibility

Technical procedure for publishing:

Environment Institute:



Source: Ms Riikka Repo, email-interview

Experiences:

Challenges:

Complex scheme of Inspire data model has caused some difficulties, especially with WFS services

- Requires lot of mapping with attributes
- Only one of the WFS services fully passes validation, others have problems with extended capabilities.
- Also users have difficulties to use complex products

After Data specification (2016) responsible organisations have changed

Technical solutions are getting old (like NLS's Deegree)



Eeva Reija 2011, CC BY 4.0

Experiences:

“Hydrographic theme was one of the easiest themes” (a comment from Environment Institute)



Eeva Reija 2011, CC BY 4.0

Future developments

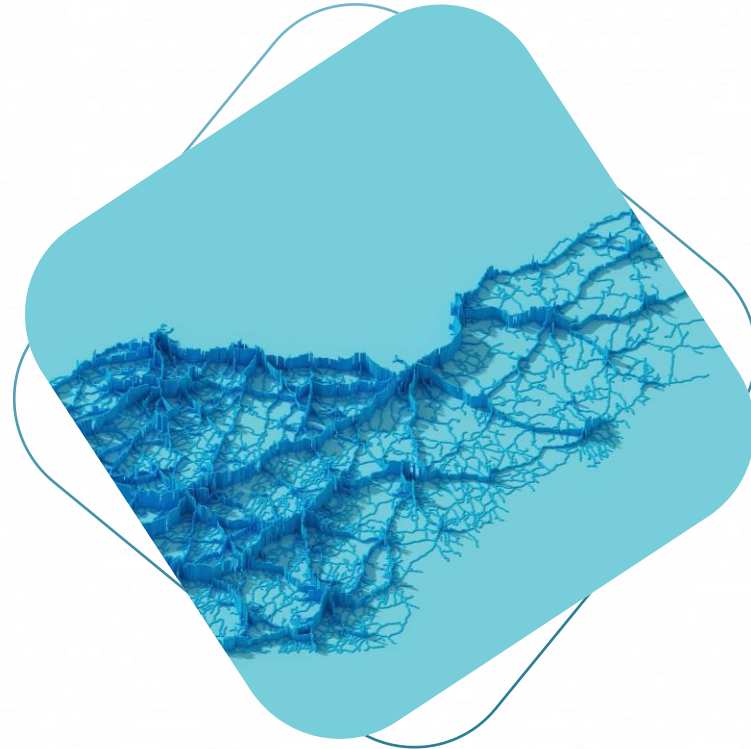
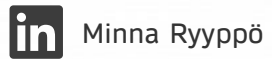
Data producers are moving towards open source techniques, like Geoserver -> service produce processes will change more alike than they are now.

Possibilities of Json-format and OGC Api services



Thank you!

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Advancing together

