



TEKNOLOGISK RAMMEVERK FOR DEN GEOGRAFISKE INFRASTRUKTUREN

Rammeverk for teknisk og semantisk interoperabilitet
i den nasjonale geografiske infrastrukturen

Vedlegg

Versjon 1.0

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Vedlegg A - Fellesløsninger

A.1 Noen utfordringer

En felles datamodell og tjenester til lokale matrikkelkopier

Bakgrunn:

Mange kommuner har i dag flere matrikkelkopier levert av ulike systemleverandører. De lokale matrikkelkopiene i kommunene er ikke standardisert, og har ulike grensesnitt og ulik oppbygning. Felles for de lokale matrikkelkopiene er at de utviklet for å kommunisere med endringslogg fra sentral matrikkel.

Fra kommunenes side er det signalisert ønske om å standardisere datamodell og grensesnitt til lokale matrikkelkopier.

Det er eksempler på at informasjon kan mistes fordi datamodellen til lokal matrikkelkopi ikke er riktig eller at tjenestene ikke tilbys av kartverket (historikk). En eiendom kan f.eks eies av et sameie av eiendommer.

Trondheim kommune sitter i dag med 4 forskjellige lokale matrikkelkopier. LMK NoIS, LMK Norkart, GAB-formatert LMK Norkart og LMK Powel. Det finnes også 2 andre varianter av LMK NoIS til forsystemer for Renholdsverket og Trøndelag brann og redningstjeneste.

I tillegg synkroniserer leverandørene disse lokale matrikkel-kopiene ned til egne webbløsninger.

Dok-analyse

Fra flere kommuner blir det hevdet at DOK-analyse bør tilbys som felles tjeneste for alle offentlige etater. I dag leveres denne type tjenester av private leverandører, kommuner og geodatasamarbeid.

I forbindelse med analyser og oppslag i forhold til saksbehandling er det avgjørende med kontroll på dataene som ligger til grunn. Hva er kilden til dataene som legges til grunn? Er analysene satt opp riktig? Når oppslag eller analyse utføres mot en kopi av et offisielt register (basisregister), er det da juridisk riktig hvis kopien inneholder feil? Hvem har ansvaret for at dataene er korrekt? Storbykommunegruppa ønsker at temaet settes på dagsorden.

A.2 Eksempler på fellesløsninger / nasjonale API'er

Eksempler på slike fellesløsninger er beskrevet i **Tabell A.1**

API	Beskrivelse
Matrikkel API	Tjenestebasert, 2 versjoner Det nye API-et inneholder innsynstjenester(for uthenting av data), endringslogg og

	oppdateringstjenester. (SOAP) Fases ut 1. Kvartal 2021: InnsynsAPI (SOAP), EndringsloggAPI (SOAP), OppdateringsAPI (Java) Nytt API (SOAP)
NVDB	Statens vegvesen tilbyr et REST-basert API som kan benyttes for å få tilgang til informasjonen som befinner seg i Nasjonal vegdatabank (NVDB).
Stednavn	SOAP og REST
Kulturminner	REST
GeoIntegrasjon	SOAP
GeoSynkronisering	SOAP
Adresse	Tidligere SOAP, nå også REST (OpenAPI)
GeonorgeAPI'et	Metadata-informasjon. C# (.NET) Kildekode tilgjengelig. https://www.geonorge.no/verktoy/APIer-og-grensesnitt/
Kartverkets høydeprofil	WPS-tjeneste. (Web Processing Service)
Kommuneinfo-API	Åpent API fra Kartverket for administrative enheter. REST (OpenAPI)
WMS, WCS og WFS tjenester fra ulike tilbydere	GeoNorge
FIKS	Plattform for digital samhandling i kommunal sektor - KS
SKTrans	KoordinatTransformasjon Native library API
NGIS	Native library API for oppdatering av Sentral-FKB
FYBA	Native library API for SOSI-filer
SOSI-kontroll	

Tabell A.1 Standarder angitt i INSPIRE implementeringsregler

Teknologisk rammeverk - Vedlegg

Eksempler der flere leverandører sammen med Kartverket har bidratt er GeoIntegrasjon og GeoSynkronisering. Erfaringer fra dette er udelt positive.

A.3 Forslag til nye fellesløsninger

AR5 validering, Plan validering

SFKB tjenestegrensesnitt

Spesifikasjon under arbeid basert på OpenAPI (REST) tjenestegrensesnitt

Kodelistetjeneste(r)

Kartverket, Artsdatabanken, Miljødirektoratet, NGU etc.

Lokal Matrikkel

Synkronisering ned i felles database, slik at den kan benyttes av alle leverandører, eller at alle må bruke et felles tjenestegrensesnitt for å hente ut fra lokal matrikkelkopi uavhengig av databaseimplementasjon.

GeoSynkronisering valideringstjeneste

F.eks. en Plantilbyder kan slå på validering som validerer data før publisering

Geosynkronisering

GeoSynkronisering som utviklingsprosjekt og teknologi er beskrevet på

<https://www.kartverket.no/geodataarbeid/geosynkronisering/>. Hensikten oppsummeres slik:

“Prosjektsatsningen har som målsetting å få utviklet standardiserte grensesnitt som muliggjør synkronisering av databaser med geografisk datainnhold på tvers av ulike plattformer og systemløsninger.”

Geointegrasjon

Geointegrasjon er et sett felles standarder og prinsipper for samspill mellom fagsystemer, GIS-, sak- og arkivsystemer i offentlig sektor. Se [detaljert informasjon om GeoIntegrasjon](#)

Modellering og spesifisering av nytt oppdateringsgrensesnitt mot SFKB (sentral felles kartdatabase)

Det pågår et arbeid med dette i strategigruppen for GeoIntegrasjon, Geosynkronisering og Sentral FKB. FKB støtter i dag NGIS-APIet samt GeoSynkronisering som tilbyder. SFKB støtter også Geosynkronisering som abonnent, men dette benyttes foreløpig ikke til oppdatering av forvaltningsbasen for SFKB.

Tiltak for forbedret grensesnitt mot SFKB:

Det lages en spesifisering på et tjenestebasert grensesnitt mot SFKB som skal være basert på OpenAPI (REST) - NGIS-OpenAPI . Grensesnittet skal være utvidbart, og uavhengig av hvordan det er implementert på serversiden. Det må tas høyde for at historiske data skal kunne håndteres i fremtiden uten at dette er noe vi ser som en begrensing nå.

Registerplattform

I regi av geonorge er det laget en open source registerløsning, som også kan brukes til andre formål enn i geonorge. Krever nok litt forståelse å implementere, dokumentasjon finnes på

<https://github.com/kartverket/Geonorge.Register>

A.4 Fellesløsninger utviklet i regi av ISA (European Interoperability solutions of European Public Administration, business and citizens)

A.4.1 iMAPS



iMAPS (Interoperability Maturity Assessment of a Public Service) er et verktøy for egevaluering av tjenester. Hensikten er å bistå eiere av offentlige tjenester på både nasjonalt, regionalt og lokalt nivå med tanke på å sikre interoperabilitet.

For nærmere informasjon, se https://ec.europa.eu/isa2/solutions/imaps_en

A.4.2 Re3gistry

OpenSource verktøy for å håndtere registerdata. Et eksempel på slike data er kodelister. Re3gistry er konformt med ISO 19135 Procedures for Item registration, og benyttes blant annet for registerdata i INSPIRE, se <http://inspire.ec.europa.eu/registry>.

Formater som støttes: XML , RDF/XML, JSON, Atom og CSV

A.4.3 VocBench3



Vocbench er en flerspråklig plattform for å forvalte omforente vokabularer tilegnet semantisk web. Utgangspunktet er å sentralisere forvaltningen av kontrollerte vokabularer og metadata for å sikre interoperabilitet.

For nærmere informasjon, se https://ec.europa.eu/isa2/solutions/vocbench3_en

A.4.4 TESTA

Et pålitelig og sikkert kommunikasjonsnettverk mellom en rekke offentlige etater i Europa.

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Jeg kjenner ikke til at vi benytter dette nettverket for å utveksle geodata, men tar det med for å gi et samlet bilde.

For nærmere informasjon, se https://ec.europa.eu/isa2/solutions/testa_en

Vedlegg B - Geodatalovens kommisjonsforordninger

B.1 Introduksjon

INSPIRE har implementeringsregler som gir nærmere anvisninger om hvordan direktivet skal implementeres og er en del av lovverket. Disse oversettes til norsk av UD's oversettelsesgruppe. Det er imidlertid et etterslep på norske oversettelser.

B.2 Tabell over sammenhengen mellom INSPIRE implementing rules og Geodatalovens kommisjonsforordninger

Sammenhengen er nærmere beskrevet i **Tabell B.1**

	INSPIRE Implementing rules	Publisert	Geodataloven (kommisjonsforordninger)	Publisert
Metadata	INSPIRE Metadata Regulation	04.12.2008	KOMMISJONSFORORDNING (EF) nr. 1205/2008 av 3. desember 2008 om gjennomføring av europaparlaments- og rådsdirektiv 2007/2/EF med hensyn til metadata(*)	2015
	Corrigendum to INSPIRE Metadata Regulation	15.01.2010		
	Commission Regulation (EU) No 1311/2014 of 10 December 2014 amending Regulation (EC) No 976/2009 as regards the definition of an INSPIRE metadata element	11.12.2014		
Data spesifikasjon	COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services	08.12.2010	KOMMISJONSFORORDNING (EU) nr. 1089/2010 av 23. november 2010 om gjennomføring av europaparlaments- og rådsdirektiv 2007/2/EF med hensyn til samvirkingsevnen til geodatasett og -tjenester(*)	17.11.2016

Teknologisk rammeverk - Vedlegg

	COMMISSION REGULATION (EU) No 102/2011 of 4 February 2011 amending Regulation (EU) No 1089/2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services	05.02.2011	KOMMISJONSFORORDNING (EU) nr. 102/2011 av 4. februar 2011 om endring av forordning (EU) nr. 1089/2010 om gjennomføring av europaparlaments- og rådsdirektiv 2007/2/EF med hensyn til samvirkingsevnen til geodatasett og -tjenester(*)	17.11.2016
	COMMISSION REGULATION (EU) No 1253/2013 of 21 October 2013 amending Regulation (EU) No 1089/2010 implementing Directive 2007/2/EC as regards interoperability of spatial data sets and services	10.12.2013	KOMMISJONSFORORDNING (EU) nr. 1253/2013 av 21. oktober 2013 om endring av forordning (EU) nr. 1089/2010 om gjennomføring av direktiv 2007/2/EF med hensyn til samvirkingsevnen til geodatasett og -tjenester	
	Commission Regulation (EU) No 1312/2014 of 10 December 2014 amending Regulation (EU) No 1089/2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data services	11.12.2014	KOMMISJONSFORORDNING (EU) nr. 1312/2014 av 10. desember 2014 om endring av forordning (EU) nr. 1089/2010 om gjennomføring av europaparlaments- og rådsdirektiv 2007/2/EF med hensyn til samvirkingsevnen til geodatatjenester	
Nettverks-tjenester	Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the Network Services	19.10.2009	KOMMISJONSFORORDNING (EF) nr. 976/2009 av 19. oktober 2009 om gjennomføring av europaparlaments- og rådsdirektiv 2007/2/EF med hensyn til netttjenester(*)	17.11.2016
	Commission Regulation amending Regulation (EC) No 976/2009 as regards download services and transformation service	08.12.2010	KOMMISJONSFORORDNING (EU) nr. 1088/2010 av 23. november 2010 om endring av forordning (EF) nr. 976/2009 med hensyn til nedlastingstjenester og omformingstjenester(*)	17.11.2016

Teknologisk rammeverk - Vedlegg

Data and service sharing	Regulation on INSPIRE Data and Service Sharing	29.03.2010		
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Tabell B.1 Sammenhengen mellom INSPIRE implementing rules og Geodatalovens kommisjonsforordningeer

Vedlegg C - Tekniske retningslinjedokumenter for søketjenester

C.1 Introduksjon

For nærmere informasjon, se [Technical Guidance for the implementation of INSPIRE Discovery Services](#)

C.2 Implementasjonskrav

Dette er anført som krav i de tekniske retningslinjedokumentene for å sikre interoperabilitet, men er ikke krav i lovens forstand dersom de går ut over det som står i direktivet og kommisjonsforordningene.

- Requirement 1 An INSPIRE Discovery Service shall implement the mandatory behaviour of a [CSW ISO AP] compliant service and the extensions as required by the INSPIRE Directive and its associated Regulations.
- Requirement 2 The extended behaviour for an INSPIRE Discovery Service with respect to the requirements of the INSPIRE Directive and the Regulation on INSPIRE Network Services [INS NS] consists of: Discovery Service Operations, Discovery Service Queryables, and Discovery Service Multilingual aspects.
- Requirement 3 The list of federated catalogues, if any, shall be advertised as the result of a Service metadata response to a Discover Metadata request
- Requirement 4 The additional search attributes listed in Section 4.4 are mandatory and shall be supported (allerede beskrevet)
- Requirement 5 The additional search attributes listed in Section 4.4 shall be advertised as the result of a Service metadata response to a discover metadata request.
- Requirement 6 See [CSW ISO AP]. INSPIRE extends this operation with an additional parameter that indicates the client's preferred language.
- Requirement 7 The response shall include discovery service metadata parameters [INS NS] by implementing either scenario below:
1. Scenario 1: Referencing a URL mapped to the GetCapabilities response by the MetadataURL element in the ExtendedCapabilities of the [CSW ISO AP]; Mandatory [OGC CSW ISO AP] capabilities parameters (see Table 2) shall be mapped to INSPIRE metadata elements to implement a consistent interface.
- OR
2. Scenario 2: Including all required metadata explicitly in the GetCapabilities response [CSW ISO AP]. INSPIRE metadata elements that can't be mapped to [CSW ISO AP] elements are implemented as Extended Capabilities.
- To fulfil the specific language requirements of the INSPIRE Network Services Regulation [INS NS], a language section shall be added in the extended capability of the service.

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- Requirement 8 [CSW ISO AP] specifies a GetCapabilities operation with several service metadata sections. The service metadata in the capabilities documents shall be in conformance with the requirements of INSPIRE service metadata [INS NS].
- Requirement 9 According to [INS NS, Annex II, Section 3.1] two parameters shall be supported by the service: Language, and Query.
- Requirement 10 The language parameter shall be implemented by using the Language queryable in a filter statement as defined by [CSW ISO AP]. With that a client can request metadata records in a specific metadata language.
- Requirement 11 The query parameter shall be implemented by the filter statement of the GetRecords-Request itself. The query has to support all mandatory search attributes
- Requirement 13 If an INSPIRE Discovery Service harvests a resource, the RESOURCETYPE of the resource being harvested shall be <http://schemas.opengis.net/iso/19139/20060504/gmd> and the RESOURCEFORMAT application/xml.
- Requirement 14 The Link Discovery Service operation allows the declaration of the availability of a Discovery Service compliant with this Regulation, for the discovery of resources through the Member State Discovery Service while maintaining the resource metadata at the owner location [INS NS]. Furthermore the Link Discovery Service Request parameter shall provide all information about the Public Authority's or Third Party's Discovery Service compliant with this Regulation, enabling the Member State Discovery Service to get resources metadata based on a combination of search criteria from the Public Authority's or Third Party's Discovery Service and to collate it with other resources metadata.
- Requirement 15 Third Party Discovery Services shall be published in the Member State's Discovery Service using the Publish Metadata operation.
- Requirement 16 A federated Discovery Service shall be published in the Member State's Discovery Service's capabilities document as the URL of its HTTP/KVP/GET GetCapabilities request.
- Requirement 17 No additional request parameters are required. However, to indicate that the query should be distributed the "DistributedSearch" parameter of a GetRecords request shall be used with the "hopCount" attribute set always equal to "2" to avoid circular searches.
- Requirement 18 [CSW ISO AP] as the base specification for the INSPIRE Discovery Service is based on the ISO 19115/19119 information model. As such, the INSPIRE metadata elements (see [INS MD]) shall be requested through the INSPIRE Discovery Service interface within a Query.
- Requirement 19 An INSPIRE discovery service shall support the queryables as indicated in Table 4: INSPIRE search criteria (queryables)
- Requirement 20 The only queryable that is not defined above, but is required to comply with [INS MDTG] is "Metadata language". This is a mandatory queryable for INSPIRE Discovery Service to support the "Language" query parameter as defined in [INS NS, Annex II, Part B, Section 3.1].

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- Requirement 21 Table 5 identifies the additional queryables that are not supported by [CSW ISO AP], but required by [INS NS]. X-Path expression and data types are taken from [INS MDTG].
- Requirement 22 All supported ISO queryables shall be advertised to be supported by an INSPIRE Discover Metadata operation; in addition, all INSPIRE search criteria (queryables) shall be listed in the section "AdditionalQueryables".
- Requirement 23 A network service metadata response shall contain a list of the natural languages supported by the service. This list shall contain one or more languages that are Supported.
- Requirement 24 A client may specify a specific language in a request. If the requested language is contained in the list of supported languages, the natural language fields of the service response shall be in the requested language. If the requested language is not supported by the service, then this parameter shall be ignored.
- Requirement 25 The name of this parameter shall be "LANGUAGE". The parameter values are based on ISO 639-2/B alpha 3 codes as used in [INS MDTG].
- Requirement 26 If a client request specifies an unsupported language, or the parameter is absent in the request, the above fields shall be provided in the service default language.
- Requirement 27 The Extended Capabilities shall indicate the response language used for the GetCapabilities-Response: Depending on the requested language the value of the <inspire_common:ResponseLanguage>/<inspire_common:Language> corresponds to the language used in the response. If a supported language was requested, <inspire_common:ResponseLanguage>/<inspire_common:Language> shall correspond to that requested language. If an unsupported language was requested or if no specific language was requested <inspire_common:ResponseLanguage>/<inspire_common:Language> shall correspond to the service default language.
- Requirement 28 The Extended Capabilities shall contain the list of supported languages indicated in <inspire_common:SupportedLanguages>. This list of supported languages shall consist of
1. exact one element <inspire_common:DefaultLanguage> indicating the service default language, and
 2. zero or more elements <inspire_common:SupportedLanguage> to indicate all additional supported languages.
- Regardless of the response language, the list of supported languages is invariant for each GetCapabilities-Response.
- Requirement 29 The Extended Capabilities shall use the XML Schema as defined in Annex A.
- Requirement 30 A client CSW Discovery.GetRecords request without a language specific filter shall be responded to including all metadata elements that comply to the request independent from any language. Depending on the discovery service contents, the response will involve metadata records of several natural languages.
- Requirement 31 A client CSW Discovery.GetRecords request containing a language specific filter requires a response of metadata records that comply to the request. If no metadata

records comply to that request, the service shall respond normally with an empty result set (without raising an exception).

- Requirement 32 If a client sends an invalid CSW Discovery.GetRecords request (that is, not compliant to CSW ISO AP) containing a language specific filter and this causes an exception at the service, the exception shall be responded in the default or in a requested and supported language. The use of a valid language specific filter itself shall not raise an exception, even if the requested language is not supported.

C.3 Implementasjonsanbefalinger

- Recommendation 1 If service exceptions are internationalised then the error messages (exceptions) are either expressed in the service's default language (suppose that the request is incorrect and the LANGUAGE parameter has not been interpreted before issuing the error/exception text) or in the preferred (requested) language in other cases.
- Recommendation 2 To ensure a common response structure for a Discover Metadata request, the value of the following request parameters shall be set as follows:
- resultType = "results"
 - outputFormat = "application/xml"
 - outputSchema = <http://www.isotc211.org/2005/gmd>
 - ElementSetName = "full"
- Recommendation 3 If an INSPIRE Discovery Service harvests a resource, the RESOURCETYPE of the resource being harvested shall be <http://schemas.opengis.net/iso/19139/20060504/gmd> and the RESOURCEFORMAT application/xml.
- Recommendation 4 If a Member State chooses to implement the Link Discovery Service Operation by enabling federated search at the Discovery Service, the IOC TF recommends that it is implemented using two operations of [CSW ISO AP]: GetRecords and GetCapabilities.
- Recommendation 5 For further language support for other operation it is recommended to replace the operation-online-resources in each language specific GetCapabilities-Response by a specific operation-online-resource for that language. To support the additional operation-online-resources the service shall listen at the language specific operation end-points to distinguish for the requested languages.
- Recommendation 6 The support of IETF RFC 4646 is recommended wherever the support of ISO/639 B alpha3 for languages infringes the conformity with the standard used for implementing the [INS NS].

Vedlegg D - Tekniske retningslinjedokumenter for visningstjenester

D.1 Introduksjon

For nærmere informasjon, se [Technical Guidance for the implementation of INSPIRE View Services](#)

Kravene og anbefalingene under må leses sammen med det tekniske retningslinjedokumentet. Ikke minst for å forstå hvilket emne som kravene / anbefalingene knytter seg til, dette kommer ikke alltid klart fram av konteksten.

Retningslinjedokumentet benytter begrepene “implementation requirements” og “implementation recommendations” Disse er ikke krav i lovens forstand dersom de går ut over det som står i direktivet og kommisjonsforordningene og er ikke å oppfatte som krav i vårt nasjonale rammeverk, men innebærer tekniske spesifikasjoner som bør følges for å oppnå interoperabilitet, og vi ønsker selvsagt at vi i nødvendig grad legger dette til grunn for våre implementasjoner.

Noen av kravene og anbefalingen er ikke lenger relevante da teknologien har utviklet seg videre siden disse kravene og anbefalingen ble forslått. I en senere versjon av rammeverket kan vi oppdatere disse anbefalingen.

D.2 Implementasjonskrav

Implementasjonskrav (Technical Guidance for the implementation of INSPIRE View Services).

Dette er anført som krav i de tekniske retningslinjedokumentene for å sikre interoperabilitet, men er ikke krav i lovens forstand dersom de går ut over det som står i direktivet og kommisjonsforordningene. Vi kan imidlertid i rammeverksdokumentet anføre disse som krav dersom det er enighet i det.

- | | |
|---------------|---|
| Requirement 1 | An INSPIRE View Service shall implement the minimal mandatory behaviour from an [ISO 19128] service, extended with the extensions required by the INSPIRE Directive and the Implementing Rules for View services. |
| Requirement 2 | The use of [ISO 19128] de jure standard as a basis for implementing an INSPIRE View service means that this service shall comply with the “basic WMS” conformance class as defined in this de jure standard. |
| Requirement 3 | The following ISO 19128 operations shall be implemented for an INSPIRE View service: GetCapabilities; GetMap. |
| Requirement 4 | The metadata response parameters shall be provided through the service Capabilities, as defined in the WMS Standard [ISO 19128, Section 7.2.4]. These |

capabilities are mandatory and defined when a WMS is set up. They consist of service information, supported operations and parameters values. The extended capabilities section shall be used to fully comply with the INSPIRE View Service metadata requirements.

- Requirement 5 The operation for implementing INSPIRE “Get View Service Metadata” operation is the GetCapabilities operation. The parameters defined within the [ISO 19128] standard shall be used to convey relevant information in order to get the expected responses as described in [INS NS, Annex III, Section 2.2] of the Regulation on INSPIRE Network Services.
- Requirement 6 The <inspire_common:MetadataURL> element within the extended INSPIRE capabilities of an [ISO 19128] – WMS 1.3.0 <wms:Capability> element shall be used to reference the INSPIRE service metadata available through an INSPIRE Discovery Service. Mandatory [ISO 19128] – WMS 1.3.0 metadata elements shall be mapped to INSPIRE metadata elements to implement a consistent interface.
- Requirement 7 INSPIRE metadata are mapped to WMS capabilities elements to its full extent. It is mandatory to use the mapping provided in this Technical Guideline (described in Section 4.2.3.3.1.1 to 4.2.3.3.1.16. INSPIRE metadata elements that cannot be mapped to available [ISO 19128] – WMS1.3.0 elements are implemented as Extended Capabilities. Metadata are published through a service's capabilities document and can be harvested by an INSPIRE Discovery service.
- Requirement 8 Regardless of the scenario chosen to be implemented, a language section shall be added in the extended capability of the service to fulfil the language requirements of the Network Services Regulation [INS NS].
- Requirement 9 Regardless of the scenario chosen to be implemented View Service Metadata shall be published in an INSPIRE Discovery Service. This is required to support a) the INSPIRE View Link service operation and b) discovery of View services by client applications such as the INSPIRE geoportal
- Requirement 10 An INSPIRE View service shall contain the INSPIRE metadata elements set out in the Metadata Regulation [INS MD] as shown in Table 3.
- Requirement 11 Within the scope defined by the INSPIRE directive the value of the Resource Type shall be fixed to ‘service’ for spatial data services. As the Resource Type is not supported by [ISO 19128] – WMS 1.3.0, an extension shall be used to map this to an <inspire_common:ResourceType> element within an <inspire_vs:ExtendedCapabilities> element.

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- Requirement 12 An extension shall be used to map Resource Locator to an <inspire_common:ResourceLocator> element within an <inspire_vs:ExtendedCapabilities> element.
- Requirement 13 Coupled Resource shall be mapped to the <MetadataURL> elements of the Layer elements of the service capabilities. If linkage to the data sets or series on which the service operates are available, then the linkage to these resources shall be provided as stated by the INSPIRE Metadata Technical Guidance [INS MDTG].
- Requirement 14 Each of the <MetadataURL> elements shall be populated with a URL that allows access to an unambiguous metadata record. The URL shall be either an HTTP/GET call on the GetRecordById operation of the Discovery Service or a direct link to the ISO 19139 metadata document.
- Requirement 15 For the Spatial Data Service Type as defined by the INSPIRE Metadata Regulation [INS MD] ('view') an extension shall be used to map this to an <inspire_common:SpatialDataServiceType> element within an <inspire_vs:ExtendedCapabilities> element. For an INSPIRE View Service the Spatial Data Service Type shall have a fixed value "view" according to INSPIRE Metadata Regulation [INS MD Part 3].
- Requirement 16 The INSPIRE Metadata Regulation [INS MD] mandates that in the case of spatial data services at least one keyword from the "Classification of Spatial data Services" (Part D.4 from INS MD) shall be provided.
- Requirement 17 If additional keywords are provided they shall be mapped with the <wms:KeywordList> element, the individual keywords shall be mapped to the <wms:Keyword> element, the referenced vocabulary shall be mapped to the 'vocabulary' attribute of the <wms:Keyword> element.
- Requirement 18 The keywords shall be mapped to the capabilities extension <inspire_common:Keyword> and <inspire_common:MandatoryKeyword> within an <inspire_vs:ExtendedCapabilities> element.
- Requirement 19 Geographic Bounding Box shall be mapped to the EX_GeographicBoundingBox element of Layer elements.
- Requirement 20 To be compliant with the INSPIRE Metadata Regulation [INS MD] and with [ISO 19115] one of following dates shall be used: date of publication, date of last revision, or the date of creation. Date of last revision is preferred. The date shall be expressed in conformity with the [INS MD]

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- Requirement 21 As the Temporal Reference is not directly supported by [ISO 19128] – WMS 1.3.0 an extension shall be used to map this to an <inspire_common:TemporalReference> element within an <inspire_vs:ExtendedCapabilities> element.
- Requirement 22 The INSPIRE Metadata Regulation [INS MD] requires that metadata shall include information on the degree of conformity with the implementing rules provided in Art. 7.1 (Interoperability of spatial data sets and services) of the INSPIRE Directive Directive 2007/2/EC].
- Requirement 23 An extension shall be used to map this to an <inspire_common:Conformity> element within an <inspire_vs:ExtendedCapabilities> element.
- Requirement 24 This metadata element shall be mapped to the <wms:Fees> element of the capabilities. If no conditions apply to the access and use of the resource, "no conditions apply" shall be used. If conditions are unknown "conditions unknown" shall be used.
- Requirement 25 Responsible Party as described in the INSPIRE Metadata Regulation [INS MD] shall be mapped to the <wms:ContactOrganization> element of the <wms:ContactPersonPrimary> within the <wms:ContactInformation> element.
- Requirement 26 The value domain of the Responsible Party role shall comply with the INSPIRE Metadata Regulation [INS MD, Part D6]. The Responsible Party Role shall be mapped to the <wms:ContactPosition> of the <wms:ContactInformation> element.
- Requirement 27 INSPIRE is more demanding than [ISO 19115] by mandating both the name of the organisation, and a contact e-mail address. The role of the responsible party serving as a metadata point of contact is out of scope of the Metadata Regulation [INS MD], but this property is mandated by [ISO 19115]. Its value shall be defaulted to "pointOfContact".
- Requirement 28 Since only one <wms:ContactInformation> element is allowed in [ISO 19128] – WMS 1.3.0 (to which Responsible Organisation is mapped), an extension shall be used to map this to an <inspire_common:MetadataPointOfContact> element within an <inspire_vs:ExtendedCapabilities> element.
- Requirement 29 As the Metadata Date is not supported by [ISO 19128] – WMS 1.3.0, an extension shall be used to map this to an <inspire_common:MetadataDate> element within an <inspire_vs:ExtendedCapabilities> element. The date shall be expressed in conformity with the [INS MD].
- Requirement 30 GetCapabilities operation metadata shall be mapped to the <wms:GetCapabilities> element.

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- Requirement 31 GetMap operation metadata shall be mapped to the <wms:GetMap> element. Either PNG or GIF format (without LZW compression) with transparency shall be supported by the View service [INS NS, Annex III, Part B].
- Requirement 32 The description of a layer shall use elements defined for the service capabilities in the [ISO 19128] standard. This description shall specify the role of some parameters for the INSPIRE View Service as stated in the Regulation on INSPIRE Network Services [INS NS].
- Requirement 33 It is mapped with <wms:Title>. The harmonised title of a layer for an INSPIRE spatial data theme is defined by [INS DS] and shall be subject to multilingualism (translations shall appear in each mono-lingual capabilities localised documents).
- Requirement 34 Text describing the layer. Subject to multilingualism. It shall be mapped with the <wms:Abstract> element.
- Requirement 35 It shall be mapped to the <wms:KeywordList> element.
- Requirement 36 This Layer metadata element shall be mapped to the <wms:BoundingBox> element. The minimum bounding rectangle of the area covered by the Layer in all supported CRS shall be given.
- Requirement 37 The [INS MD] Regulation defines a Unique Resource Identifier as a value uniquely identifying an object within a namespace. The code property shall be specified at a minimum, and a codeSpace (namespace) property may be provided.
- Requirement 38 To be able to map the concept of a responsible body/codeSpace and local identifier/code to [ISO 19128]), AuthorityURL and Identifier elements shall be used. The authority name and explanatory URL shall be defined in a separate AuthorityURL element, which may be defined once and inherited by subsidiary layers. Identifiers themselves are not inherited.
- Requirement 39 Name shall be mapped with the <wms:Name> element. The harmonised name of a layer shall comply with the Layer requirements of the [INS DS, Article 14]
- Requirement 40 It is mandatory to use geographical coordinate system based on ETRS89 in continental Europe and ITRS outside continental Europe.
- Requirement 41 A Style shall be composed of a Title and a Unique Identifier.
- Requirement 42 An <inspire_common:DEFAULT> style for each theme shall be as defined in the "Portrayal" section of the [INS DS, Article 14].
- Requirement 43 For layers with no associated default style, the INSPIRE Generic Conceptual Model [INS GCM] defines simple styles shall be used in data portrayal, derived from Symbology Encoding Implementation Specification [OGC SEIS]: Point: grey square, 6 pixels; Curve: black solid line, 1 pixel; Surface: black solid line, 1 pixel, grey fill.

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- Requirement 44 If no style is specified in the request or the style parameter is empty, the <inspire_common:DEFAULT> style shall be used in layer rendering.
- Requirement 45 A legend shall be provided for each style and supported language defined in the View Service.
- Requirement 46 Style shall be mapped to the <wms:Style> element. The humanreadable name shall be mapped to the <wms:Title> element and the Unique Identifier shall be mapped to the <wms:Name> element.
- Requirement 47 As the capabilities document is a mono-lingual document, internationalized legend may be placed in a different capabilities document for each value of the LANGUAGE parameter. It shall be mapped with the <wms:LegendURL> element.
- Requirement 48 In other cases such as time and elevation, <wms:Dimension> shall be used according to [INS NS].
- Requirement 49 A containing Category Layer itself includes a Name by which a map portraying all of the nested layers can be requested at once. If a metadata description of this category composition exists then the MetadataURL for the Category Layer shall be provided.
- Requirement 50 The mandatory VERSION parameter. The value "1.3.0" shall be used for GetMap requests that comply with the [ISO 19128] standard.
- Requirement 51 The mandatory REQUEST parameter is defined in [ISO 19128, Section 6.9.2]. To invoke the GetMap operation, the value "GetMap" shall be used to comply with the [ISO 19128] standard.
- Requirement 52 The mandatory LAYERS parameter lists the map layer(s) to be returned by this GetMap request. The value of the LAYERS parameter shall be a comma-separated list of one or more valid INSPIRE harmonized layer names.
- Requirement 53 The mandatory STYLES parameter lists the style in which each layer is to be rendered. The value of the STYLES parameter shall be a comma-separated list of one or more valid INSPIRE style names. A client may request the default Style using a null value (as in "STYLES=").
- Requirement 54 The CRS request parameter states what Layer CRS applies to the BBOX request parameter. Values must be CRS that are defined in the INSPIRE Annex I, theme 1, Coordinate Reference System.
- Requirement 55 The mandatory BBOX parameter allows a Client to request a particular Bounding Box. The value of the BBOX parameter in a GetMap request shall be a list of comma-separated real numbers in the form "minx,miny,maxx,maxy". These values specify the minimum X, minimum Y, maximum X, and maximum Y values of a region in the Layer CRS of the request. The units, ordering and direction of increment of the X and

- Y axes shall be as defined by the Layer CRS. The four bounding box values indicate the outside limits of the region.
- Requirement 56 The mandatory WIDTH and HEIGHT parameters specify the size in integer pixels of the map to be produced.
- Requirement 57 The mandatory FORMAT parameter states the desired format of the map. The [INS NS, Annex III, Part B, Section 2] Image format states that at least one of “image/png” or “image/gif” must be supported and therefore advertised in the GetCapabilities operation.
- Requirement 58 The optional TRANSPARENT parameter specifies whether the map background is to be made transparent or not. The service is required to implement this.
- Requirement 59 The default value shall be "XML" if this parameter is absent from the request. Other valid values are INIMAGE and BLANK.
- Requirement 60 As stated in [INS NS], the Link View Service operation allows a Public Authority or a Third Party to declare a View Service for the viewing of its resources through the Member State View Service while maintaining the viewing capability at the Public Authority or the Third party location. Furthermore, the Link View Service parameter shall provide all information about the Public Authority’s or Third Party’s View Service compliant with this regulation, enabling the Member State View Service to get a map from the Public Authority’s or Third Party’s View Service and to collate it with other maps.
- Requirement 61 This operation shall be implemented with the Discover Metadata operation of the Discovery Service.
- Requirement 62 In the case where it is more preferable to collate maps in a View Service (for example: the Member State View Service collates maps that are served locally with maps that are served remote by a Third Party), the Member State’s View Service shall include the service’s layer metadata in his own service metadata (capabilities document).
- Requirement 63 The “cascaded” attribute of the <wms:Layer> element shall be used to indicate that the layer is hosted by a remote View Service.
- Requirement 64 Every time a map from a View Service is cascaded through another View Service the value of the “cascaded” attribute shall be incremented by 1. The actual collation of maps is out-of-scope for this Technical Guideline.
- Requirement 65 To support collation with other maps for both supported image formats (GIF and PNG), the transparency parameter (TRANSPARENT) of the WMS GetMap request

shall be set to “true” and the background parameter (BGCOLOR) for all layers shall be set to the same colour.

- Requirement 66 A network service metadata response shall contain a list of the natural languages supported by the service. This list shall contain one or more languages that are supported.
- Requirement 67 A client may specify a specific language in a request. If the requested language is contained in the list of supported languages, the natural language fields of the service response shall be in the requested language. If the requested language is not supported by the service, then this parameter shall be ignored.
- Requirement 68 The name of this parameter shall be “LANGUAGE”. The parameter values are based on ISO 639-2/B alpha 3 codes as used in [INS MDTG].
- Requirement 69 If a client request specifies an unsupported language, or the parameter is absent in the request, the above fields shall be provided in the service default language.
- Requirement 70 The Extended Capabilities shall indicate the response language used for the GetCapabilities-Response: Depending on the requested language the value of the <inspire_common:ResponseLanguage> corresponds to the current used language. If a supported language was requested, <inspire_common:ResponseLanguage> shall correspond to that requested language. If an unsupported language was requested or if no specific language was requested <inspire_common:ResponseLanguage> shall correspond to the service default language <inspire_common:DefaultLanguage>
- Requirement 71 The Extended Capabilities shall contain the list of supported languages indicated in <inspire_common:SupportedLanguages>. This list of supported languages shall consist of:
1. exact one element <inspire_common:DefaultLanguage> indicating the service default language, and
 2. zero or more elements <inspire_common:SupportedLanguage> to indicate all additional supported languages.
- Regardless of the response language, the list of supported languages is invariant for each GetCapabilities-Response.
- Requirement 72 The Extended Capabilities shall use the XML Schema as defined in the INSPIRE online schema repository.
- Requirement 73 If any portrayal rules require language support for rendered text - e.g. by further amendments for Annex II or Annex III - INSPIRE View Services shall implement the common concept as stated in Section 4.3.2.

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- Requirement 74 An INSPIRE View Service shall implement the mandatory behaviour from an [OGC 07-057r7] service, extended with the extensions required by the INSPIRE Directive and the Implementing Rules for View services.
- Requirement 75 The following [OGC 07-057r7] operations shall be implemented for an INSPIRE View service: GetCapabilities; GetTile.
- Requirement 76 The Link View Service operation shall be handled by the INSPIRE Discovery Service [INS DSTG].
- Requirement 77 Common request parameters for the View Service operations:
- SERVICE The SERVICE parameter is the service type identifier. The value shall be "WMTS".
- REQUEST The mandatory REQUEST parameter indicates which service operation is being invoked. The value shall be the name of one of the operations offered by the Web Map Tile Service.
- LANGUAGE See Section 0 Language Requirements (INSPIRE extension)
- Requirement 78 The following metadata response parameters shall be contained in a Get View Service Metadata response:
- View Service Metadata;
 - Operations Metadata;
 - Layers Metadata;
 - Languages.
- Most of the necessary metadata can be provided through the service Capabilities, as defined in the WMTS Standard [OGC 07-057r7, Section 7.1.1]. These capabilities are mandatory and defined when a WMTS is set up. They consist of server's information, supported operations and parameters values.
- Requirement 79 Layers shall provide a link to the metadata description of the spatial dataset using the "ows:Metadata" element as part of the layer metadata. This element shall be populated with a URL that allows access to an unambiguous metadata record. The URL may be either: A HTTP/GET call on the GetRecordById operation of the Discovery Service using the identifier of the metadata document; or a direct link to the metadata document.
- Requirement 80 The third mandatory operation "Link View Service", which allows a Public Authority or a Third Party to declare a view Service for the viewing of its resources through the Member State View Service while maintaining the viewing capability at the Public Authority or the Third party location, shall be implemented through the "Discover

- Metadata” operation of the Discovery Service which allows for View service metadata to be retrieved.
- Requirement 81 The GetCapabilities operation metadata shall be mapped to the <ows:Operation name="GetCapabilities"> element.
- Requirement 82 The GetTile operation metadata shall be mapped to the <ows:Operation name="GetTile"> element. Either PNG or GIF format (without LZW compression) shall be supported by the View service [INS NS, Annex III, Part B].
- Requirement 83 The use of the “Discover Metadata” operation of the INSPIRE Discovery service is recommended for implementing the Link View Service operation.
- Requirement 84 The description of a layer shall use elements defined for the service capabilities in the [OGC 07-057r7] standard. This description shall specify the role of some parameters for the INSPIRE View Service as stated in the Regulation on INSPIRE Network Services [INS NS]:
- Requirement 85 The Resource title of the layer, used for human communication, for example presentation of the layer in a menu. It is mapped with <ows:Title>. The harmonised title of a layer for an INSPIRE spatial data theme is defined by [Directive 2007/2/EC] and shall be subject to multilingualism (translations shall appear in each mono-lingual capabilities localized documents).
- Requirement 86 Layer abstract: text describing the layer. Subject to multilingualism. It shall be mapped with the <ows:Abstract> element.
- Requirement 87 Additional Keywords: list of keywords describing the layer, to support catalog search (to be harmonised the INSPIRE metadata element Keyword Value, see [INS DSTG, Section 3.2.3] It shall be mapped to the <ows:Keywords> element.
- Requirement 88 Geographic Bounding Box element is used to facilitate geographic searches. It shall be mapped to the <ows:WGS84BoundingBox> element. The minimum bounding rectangle in decimal degrees of the area covered by the Layer shall be supplied regardless of what CRS the tileMatrixSet may define and shall use WGS:84 as Coordinate Reference System.
- Requirement 89 It is mandatory to use geographical coordinate system based on ETRS89 in continental Europe and ITRS outside continental Europe.
- Requirement 90 Style shall be mapped to the <Style> element. The humanreadable name shall be mapped to the <ows:Title> element and the Unique Identifier shall be mapped to the <ows:Identifier> element.

Requirement 91 As the capabilities document is a mono-lingual document, internationalized legend may be placed in different capabilities document for each value of the LANGUAGE parameter. It shall be mapped with the <ows:LegendURL> element.

Requirement 92 Table 15 shows INSPIRE parameters that shall be used within the WMTS GetTile operation according to the [INS NS]:

D.3 Implementasjonsanbefalinger

Recommendation 1 It is recommended that the GET method is used for the view service operations.

Recommendation 2 If service exceptions are internationalised then the error messages (exceptions) are either expressed in the service's default language (suppose that the request is incorrect and the LANGUAGE parameter has not been interpreted before issuing the error/exception text) or in the preferred (requested) language in other cases.

Recommendation 3 Additional keywords may be described as a free text or may originate from any Controlled Vocabulary. If they originate from a Controlled Vocabulary, for example GEMET, then the citation of the originating Controlled Vocabulary shall be provided in the extended capabilities.

Recommendation 4 While this issue is being addressed by the standardisation community, spatial resolution restrictions for services shall be written in the Abstract as mandated by the Metadata Technical Guidance [INS MDTG]. Spatial Resolution restrictions at service metadata level shall be declaratively described in the <wms:Abstract> element.

Recommendation 5 The use of "None" is recommended when no limitations on public access apply. When constraints are imposed, the MD_RestrictionCode codelist names may be used as defined in [ISO 19115, Annex B – Data Dictionary, Section 5.24].

Recommendation 6 If PNG format is supported; the View service may select an appropriate bit depth for the returned PNG image. For layers with up to 256 colours, the recommended format is 8-bit indexed PNG. For layers with more than 256 colours, a higher bit depth should be used.

Recommendation 7 The use of the "Discover Metadata" operation of the INSPIRE Discovery service is recommended for implementing the Link View Service operation.

Recommendation 8 It is recommended to harmonise the Additional Keywords with the INSPIRE service metadata element Keyword, to facilitate searches.

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- Recommendation 9 If a codeSpace is provided, the data type to be used shall be RS_Identifier. The value of the "id" attribute assigned to the MD_DataIdentification element should be used for cross-references within the document, or as the fragment identifier in links to the element from external resources.
- Recommendation 10 The usage of a UUID (Universal Unique Identifier, as specified by IETF (<http://www.ietf.org>)) is recommended to ensure identifier's uniqueness.
- Recommendation 11 As two types of CRS identifiers are permitted ("label" with EPSG, CRS and AUTO2 namespaces, and "URL" identifiers as fully-qualified Uniform Resource Locator that references a publicly-accessible file containing a definition of the CRS that is compliant with ISO 19111), it is recommended to set up a register for the INSPIRE framework.
- Recommendation 12 In addition to the <inspire_common:DEFAULT> style, the View Service should provide additional thematic or national styles for each layer, for example IGNF:TN.ROADTRANSPORTNETWORKS.ROADS.
- Recommendation 13 It is recommended to use "image/png" or "image/gif" mime types for a legend.
- Recommendation 14 The optional <wms:Dimension> element should be used in service metadata to declare that one or more dimensional parameters are relevant to a layer or group of layers.
- Recommendation 15 When the map is fully defined by its two-dimensional axis (defined in the CRS), this metadata element should not be provided.
- Recommendation 16 Category Layers should be used to describe a layer including more than one featurtype (e.g. Hydrography Layers in INSPIRE Regulation as regards interoperability of spatial data sets and services [INS DS]) or a layer consisting of regional separated spatial datasets.
- Recommendation 17 For further language support for other operation it is recommended to replace the operation-online-resources in each language specific GetCapabilities-Response by a specific operation-online-resource for that language. To support the additional operation-online-resources the service shall listen at the language specific operation end-points to distinguish for the requested languages.
- Recommendation 18 The support of IETF RFC 4646 is recommended wherever the support of ISO/639 B alpha3 for languages infringes the conformity with the standard used for implementing the [INS NS].
- Recommendation 19 It is recommended that http URIs be used instead of URNs

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Merknad: In June 2010 OGC revised the naming policy to use http URIs to identify persistent OGC resources instead of URNs. For more information see <http://www.opengeospatial.org/projects/groups/ogcnasc>.

- Recommendation 20 It is recommended that the GET method is used for the view service operations.
- Recommendation 21 Every layer offered by a INSPIRE WMTS should use the InspireCRS84Quad MatrixSet
- Recommendation 22 It is recommended to use ETRS89 ellipsoidal coordinate reference system when using a tile cache map service : "EPSG:4258".
- Recommendation 23 It is recommended to use InspireCRS84Quad as the tiling scheme definition.

Vedlegg E - Tekniske retningslinjedokumenter for nedlastingstjenester

E.1 Introduksjon

For nærmere informasjon, se [Technical Guidance for the implementation of INSPIRE View Services](#)

Kravene og anbefalingene under må leses sammen med det tekniske retningslinjedokumentet. Ikke minst for å forstå hvilket emne som kravene / anbefalingene knytter seg til, dette kommer ikke alltid klart fram av konteksten.

Retningslinjedokumentet beskriver flere konformitetsklasser og benytter begrepene "TG Requirements" og "TG Recommendations". Disse er ikke krav i lovens forstand dersom de går ut over det som står i direktivet og kommisjonsforordningene og er ikke å oppfatte som krav i vårt nasjonale rammeverk, men innebærer tekniske spesifikasjoner som bør følges for å oppnå interoperabilitet, og vi ønsker selvsagt at vi i nødvendig grad legger dette til grunn for våre implementasjoner.

Noen av kravene og anbefalingen er ikke lenger relevante da teknologien har utviklet seg videre siden disse kravene og anbefalingen ble forslått. I en senere versjon av rammeverket kan vi oppdatere disse anbefalingen.

E.2 Konformitetsklasse Pre-defined atom

This conformance class is inclusive of:

- TG Requirement 1 to TG Requirement 45
- TG Recommendation 1 to TG Recommendation 12

E.2.1 Implementasjonskrav

Dette er anført som krav i de tekniske retningslinjedokumentene for å sikre interoperabilitet, men er ikke krav i lovens forstand dersom de går ut over det som står i direktivet og kommisjonsforordningene.

Vi kan imidlertid i rammeverksdokumentet føre disse som krav dersom det er enighet i det.

- Requirement 1 Pre-defined Dataset Download Service implementations shall publish separate datasets as individual entries within an Atom feed.
- Requirement 2 All Atom feeds (and entries in feeds) shall conform to all the requirements in the Atom specification, RFC 4287.
- Requirement 3 All GeoRSS information in Atom feeds shall conform to the GeoRSS-Simple specification.
- Requirement 4 All OpenSearch information in Atom feeds shall conform to the OpenSearch specification.

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- Requirement 5 The `__title'` element of an Atom feed shall be populated with a human readable title for the feed.
- Requirement 6 The `—Download Service Feed` shall contain an Atom `__link'` element that links to the metadata record for this Download Service. The value of the `__rel'` attribute of this element shall be `—describedby` and the value of the `__type'` attribute shall be either "application/xml".
- Requirement 7 The `—Download Service Feed` shall contain an Atom `__link'` element that contains an HTTP URI for the `—Download Service Feed` document. The value of the `__rel'` attribute of this element shall be `—self`, the `__hreflang'` attribute shall use the appropriate language code and the value of the `__type'` attribute shall be `—application/atom+xml`.
- Requirement 8 The `—Download Service Feed` shall contain an Atom `__link'` element that contains a link to an OpenSearch description document for the Download Service. The value of the `__rel'` attribute of this element shall be `—search`, the `__hreflang'` attribute shall use the appropriate language code and the value of the `__type'` attribute shall be `—application/opensearchdescription+xml`.
- Requirement 9 The `__id'` element of a feed shall contain an HTTP URI which dereferences to the feed.
- Requirement 10 The `__rights'` element of a feed shall contain information about rights or restrictions for that feed.
- Requirement 11 The `__updated'` element of a feed shall contain the date, time and timezone at which the feed was last updated.
- Requirement 12 The `__author'` element of a feed shall contain current contact information for an individual or organisation responsible for the feed. At the minimum, a name and email address shall be provided as contact information.
- Requirement 13 Each feed `__entry'` in a `—Download Service Feed` shall contain `spatial_dataset_identifier_code` and `spatial_dataset_identifier_namespace` elements which together contain the Spatial Dataset Unique Resource Identifier for the dataset described by the feed. These elements are defined in the `inspire_dls` schema which shall be included in the namespace declarations of the feed.
- Requirement 14 Each feed `__entry'` in a `—Download Service Feed` shall contain a link to a Dataset metadata record. This link shall have a `__rel'` attribute with a value of `—describedby` and a `__type'` attribute with a value `—application/xml`
- Requirement 15 Each feed `__entry'` in a `—Download Service Feed` shall contain a single link to a `—Dataset Feed`. This link shall have a `__rel'` attribute with a value of `—alternate` and a `__type'` attribute with a value `—application/atom+xml`

- Requirement 16 In case of a —hybrid implementation based on Atom for Part A of [INS NS, Annex IV] and WFS for Parts B and C of [INS NS, Annex IV], a link shall be provided to the WFS Capabilities document. Where this is done the „_rel“ attribute shall have the value —related and the „_type“ attribute shall have the value —application/xml
- Requirement 17 The „_id“ element of a feed entry in a Download Service Feed shall contain an identifier for that feed entry.
- Requirement 18 The „_title“ element of a feed entry in a Download Service Feed shall be populated with a human readable title for the feed entry.
- Requirement 19 The „_updated“ element of a feed entry in a Download Service Feed shall contain the date, time and timezone at which the feed entry was last updated.
- Requirement 20 Each feed entry shall contain an Atom „_category“ element for each CRS in which the pre-defined dataset is available. This category element shall refer to a well-known definition of a coordinate reference system.
- Requirement 21 The „_title“ element of a —Dataset Feed shall be populated with a human readable title for the feed.
- Requirement 22 The „_id“ element of a —Dataset Feed shall contain an HTTP URI which dereferences to the feed
- Requirement 23 The „_rights“ element of a —Dataset Feed shall contain information about rights or restrictions for that feed.
- Requirement 24 The „_updated“ element of a —Dataset Feed shall contain the date, time and timezone at which the feed was last updated.
- Requirement 25 The „_author“ element of a —Dataset Feed shall contain current contact information for an individual or organisation responsible for the feed. At the minimum, a name and email address shall be provided as contact information.
- Requirement 26 Each —Dataset Feed shall contain at least one feed entry containing links to download the pre-defined dataset (e.g. as a GML file).
- Requirement 27 Each "Dataset Feed" shall contain separate entries for each format/CRS combination in which the pre-defined dataset is available to download.
- Requirement 28 Each feed shall contain an Atom „_link“ element for each INSPIRE Spatial Object Type in the dataset. The link shall refer to the INSPIRE Registry unless the data does not conform to any Data Specification in which case a link to a local definition of the Spatial Object Type shall be used instead. The value of the „_rel“ attribute of this element shall be —describedby . For definitions in the INSPIRE registry the value of the „_type“ attribute shall be —text/html .

- Requirement 29 Each feed entry shall contain an Atom `_link'` element that links to the pre-defined dataset file described by the entry. The value of the `_rel'` attribute of this element shall be `—alternate` and a `—length` attribute (providing the length of the linked resource in octets*) shall be provided if possible. Where a dataset is provided in multiple physical files, additional `_link'` elements shall be provided in the feed entry, one link for each physical file.
- *1 octet = 8 bits (usually synonymous with 1 byte)
- Requirement 30 The `_type'` attribute of the link element shall be used to indicate the media type of resource that will be returned if the link is resolved. A valid media type must be used for the value of this attribute; if the media type is not registered with IANA it should still follow the conventions for unregistered media types.
- Requirement 31 Where alternative language representations of datasets are linked to, the `_hreflang'` attribute of the link element shall be used to indicate the language of the target dataset as described in the Atom specification.
- Requirement 32 Where a dataset is provided in multiple physical files: each file shall be linked to via a separate `_link'` element. Each of these `_link'` elements shall have a `_rel'` value equal to `—section` .
- Requirement 33 Where a dataset is provided in multiple physical files: a description of the dataset structure shall be provided EITHER in an atom `_content'` element as free text, OR in an external document which is the target of another `_link'` element. Where a `_link'` element is used this element shall have a `_rel'` value equal to `—alternate` and a suitable media type shall be used for the `_type'` value.
- Requirement 34 Only media types listed in the INSPIRE media-types register shall be used.
- Requirement 35 Each CRS representation shall have a `_category'` element which refers to the CRS definition and code.
- Requirement 36 A Download Service metadata response shall contain a list of the natural languages supported by the service. This list shall contain one or more languages that are supported.
- Requirement 37 A client may specify a specific language in a request. If the requested language is contained in the list of supported languages, the natural language fields of the service response shall be in the requested language. If the requested language is not supported by the service, then this parameter shall be ignored.
- Requirement 38 Where a feed is made available in alternative languages, links shall be provided to these alternative representations. These links shall each use the `_hreflang'` attribute

to indicate the language of the alternative representation. The value of the `__rel` attribute for these link elements this element shall be `—alternate` .

- Requirement 39 A simple service to perform the Describe Spatial Dataset and Get Spatial Data Set operations shall be provided and described by an OpenSearch description document.
- Requirement 40 The OpenSearch description shall contain a `__Url` element that describes an HTTP URI for the OpenSearch Description document. The value of the `__rel` attribute of this element shall be `—self` , the value of the `__type` attribute shall be `—application/opensearchdescription+xml` and the value of the `__template` attribute shall be the HTTP URI of the document.
- Requirement 41 The OpenSearch description shall contain a `__Url` element that describes a template URL for generic search queries. The value of the `__rel` attribute of this element shall be `—results` , the value of the `__type` attribute shall be `—text/html` .
- Requirement 42 The OpenSearch description shall contain a `__Url` element that describes a template URL for the Describe Spatial Data Set operation. This template shall accept the INSPIRE parameters `—spatial_dataset_identifier_code` , `—spatial_dataset_identifier_namespace` and the OpenSearch `—language` parameter. The `__Url` element shall have an attribute `__type` with a value of `—application/atom+xml` and an attribute `__rel` with the value `—describedby` .
- Requirement 43 The OpenSearch description shall contain a `__Url` element that describes a template URL for the Get Spatial Data Set operation. This template shall accept the INSPIRE parameters `—crs` , `—spatial_dataset_identifier_code` , `—spatial_dataset_identifier_namespace` and the OpenSearch `—language` parameter. The `__Url` element shall have an attribute `__type` with a value corresponding to the media type of the result and an attribute `__rel` with the value `—results` .
- Requirement 44 For each dataset available the OpenSearch description shall contain a `__Query` element that has a `__role` attribute with the value `—example` and `__spatial_dataset_identifier_code` and `__spatial_dataset_identifier_namespace` attributes together containing unique spatial dataset identifier. The value of the `__crs` and `__language` attributes shall be set to the values considered as the default ones by the service provider.
- Requirement 45 For each language supported by the download service, the OpenSearch description shall contain a `__Language` element that contains the language code. The first `__Language` element shall contain the Default Language.

E.2.2 Implementasjonsanbefalinger

- Recommendation 1 The `__subtitle` element of an Atom feed may be populated with a human readable subtitle for the feed.
- Recommendation 2 Alternative representations (for example HTML) should be provided as links. Where this is done the `__rel` attribute should have the value `—alternate`.
- Recommendation 3 The `__rights` element of a feed entry may contain information about rights or restrictions specific to that feed entry.
- Recommendation 4 The `__author` element of a feed entry may contain information about the author specific to that feed entry.
- Recommendation 5 The `__summary` element of a feed entry should contain a summary description of the feed entry.
- Recommendation 6 GeoRSS-Simple should be used in feed entries to indicate the geographic extent of the dataset.
- Recommendation 7 The bounding box of the dataset described by a feed entry should be provided using a `georss:polygon`, unless the geographic extent is a single point in which case `georss:point` should be used.
- Recommendation 8 The `__subtitle` element of a `—Dataset Feed` may be populated with a human readable subtitle for the feed.
- Recommendation 9 A link element should be included that links to the `__parent` Dataset feed. This link should have a `__rel` attribute with a value of `—up` and a `__type` attribute with a value of `—application/atom+xml`.
- Recommendation 10 Where a dataset is provided in multiple physical files: a `__bbox` attribute may be used to describe the geospatial extent of a particular file. If this is used, then the value of this attribute should be structured according to the `georss:box` structure.
- Recommendation 11 Where a dataset is provided in multiple physical files: a `__time` attribute may be used to describe the temporal extent of a particular file. If this is used, then the value of this attribute should be structured according to the ISO 8601 standard.
- Recommendation 12 For files that are made available uncompressed, compression is offered by HTTP 1.1 server and clients. As spatial data sets may be large, clients should set their HTTP Accept-Encoding header to include "gzip, deflate" in each request for uncompressed files.

E.3 Konformitetsklasse Pre-defined WFS/FE

This conformance class is inclusive of:

- TG Requirement 46 to TG Requirement 60
- TG Recommendation 14 to TG Recommendation 15

E.3.1 Implementasjonskrav

Dette er anført som krav i de tekniske retningslinjedokumentene for å sikre interoperabilitet, men er ikke krav i lovens forstand dersom de går ut over det som står i direktivet og kommisjonsforordningene. Vi kan imidlertid i rammeverksdokumentet føre disse som krav dersom det er enighet i det.

- Requirement 46 Implementations shall conform to ISO 19142 Conformance Class `_Simple WFS'`
- Requirement 47 Implementations shall conform to ISO 19143 Conformance Class `_Query'`
- Requirement 48 Implementations shall conform to ISO 19142 Conformance Class `_HTTP Get'`
- Requirement 49 Pre-defined Stored Queries shall be provided to make pre-defined datasets available.
- Requirement 50 Any possible (i.e. available) combinations of CRS/DataSetIdCode/
DataSetIdNamespace/language shall be made available through pre-defined stored queries.
- Requirement 51 Pre-defined Stored Queries shall use the parameter names `—CRS` ,
`—DataSetIdCode` , `—DataSetIdNamespace` and `—Language` to identify the CRS,
dataset ID code, dataset ID namespace and language components of a query.
- Requirement 52 A separate WFS endpoint shall be provided for each INSPIRE dataset thus providing one dataset per GetCapabilities response.
- Requirement 53 INSPIRE Metadata for the Download Service shall EITHER be linked to via an `<inspire_common:MetadataURL>` in an extended capabilities section, OR the extended capabilities section shall contain all the INSPIRE Metadata for the Download Service in accordance with Table 4 and the `inspire_dls:ExtendedCapabilities` schema.
- Requirement 54 A network service [Download Service] metadata response shall contain a list of the natural languages supported by the service. This list shall contain one or more languages that are supported.
- Requirement 55 A client may specify a specific language in a request. If the requested language is contained in the list of supported languages, the natural language fields of the service response shall be in the requested language. If the requested language is not supported by the service, then this parameter shall be ignored.

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- Requirement 56 The name of this parameter shall be —LANGUAGE . The parameter values are based on ISO 639-2/B alpha 3 codes as used in [INS MDTG].
- Requirement 57 If a client request specifies an unsupported language, or the parameter is absent in the request, the above fields [Title, Abstract] shall be provided in the service default language.
- Requirement 58 The Extended Capabilities shall indicate the response language used for the GetCapabilities-Response: Depending on the requested language the value of the <inspire_common:ResponseLanguage> corresponds to the current used language. If a supported language was requested, <inspire_common:ResponseLanguage> shall correspond to that requested language. If an unsupported language was requested or if no specific language was requested <inspire_common:ResponseLanguage> shall correspond to the service default language <inspire_common:DefaultLanguage>
- Requirement 59 The Extended Capabilities shall contain the list of supported languages indicated in <inspire_common:SupportedLanguages>. This list of supported languages shall consist of 1. exactly one element <inspire_common:DefaultLanguage> indicating the service default language, and 2. zero or more elements <inspire_common:SupportedLanguage> to indicate all additional supported languages. Regardless of the response language, the list of supported languages is invariant for each GetCapabilities-Response.
- Requirement 60 The Extended Capabilities shall use the XML Schema as defined in the INSPIRE online schema repository.

E.3.2 Implementasjonsanbefalinger

- Recommendation 14 For further language support for other operations it is recommended to replace the operation-online-resources in each language specific GetCapabilities-Response by a specific operation-online-resource for that language. To support the additional operation-online-resources the service shall listen at the language specific operation end-points to distinguish for the requested languages.
- Recommendation 15 The support of IETF RFC 4646 is recommended wherever the support of ISO/639 B alpha3 for languages infringes the conformity with the standard used for implementing the [INS NS].

E.4 Konformitetsklasse Direkte access WFS/FE

This conformance class is inclusive of:

TG Requirement 61 to TG Requirement 68

E.4.1 Implementasjonskrav

Dette er anført som krav i de tekniske retningslinjedokumentene for å sikre interoperabilitet, men er ikke krav i lovens forstand dersom de går ut over det som står i direktivet og kommisjonsforordningene. Vi kan imidlertid i rammeverksdokumentet føre disse som krav dersom det er enighet i det.

- Requirement 61 Implementations shall meet TG Requirement 48 (conformance to [ISO 19142] `HTTP GET` conformance class) and TG Requirement 52 (one endpoint for each INSPIRE dataset).
- Requirement 62 Implementations shall conform to ISO 19142 Conformance Class `Basic WFS`
- Requirement 63 A Direct Access Download Service shall conform to ISO 19143 `Ad hoc Query` Conformance Class.
- Requirement 64 A Direct Access Download Service shall conform to ISO 19143 `Resource Identification` Conformance Class.
- Requirement 65 A Direct Access Download Service shall conform to ISO 19143 `Minimum Standard Filter` Conformance Class.
- Requirement 66 A Direct Access Download Service shall conform to ISO 19143 `Minimum Spatial Filter` Conformance Class.
- Requirement 67 A Direct Access Download Service shall conform to ISO 19143 `Minimum Temporal Filter` Conformance Class.
- Requirement 68 A Direct Access Download Service shall conform to ISO 19143 `Minimum XPath` Conformance Class.

E.5 WFS metadata for “hybrid implementasjon”

Recommendation 16 In addition, a textual reference to the Atom service implementing part A should be included in the `abstract` metadata element of the WFS.

Vedlegg F - Implementasjon av omformingstjeneste

F.1 Introduksjon

For nærmere informasjon, se [Technical Guidance for the implementation of INSPIRE Schema Transformation Network Service](#)

F.2 Krav og anbefalinger

Disse implementasjonsanbefalingene tar utgangspunkt i å beskrive omformingen ved hjelp av W3C's "Rule Interchange format (RIF).

- Recommendation: Passage of parameters should be by reference for reasons of performance, flexibility of deployment and service manageability.
- Recommendation: Service linking should be addressed as part of service installation and configuration, rather than be performed using a web service interface.
- Recommendation: The interface should be specified formally using SOAP/WSDL.
- Recommendation: When referring to spatial functions and predicates within a RIF document, use the OGC Simple Feature Access Specification version 1.2 as the basis for identifying and naming function and predicate placeholders.
- Recommendation: The Schema Transformation Network Service should use RIF-PRD as the mapping definition language.
- Recommendation: The Schema Transformation Network Service should support all the basic RIF functions.
- Recommendation: The Schema Transformation Network Service should support all the operations identified in the OGC Simple Feature Specification.

Vedlegg G - Framstilling og vedlikehold av metadata

G.1 Introduksjon

De metadata som beskriver et geodatasett, en serie av geodatasett eller en geodatatjeneste skal omfatte de metadataelementene eller gruppene av metadataelementer i henhold til [KOMMISJONSFORORDNING \(EF\) nr. 1205/2008 metadata](#) beskrevet i kapittel H2, samt de utvidelser som er spesifisert i geonorge, kapittel H3.

Dette settet av metadataelementer tilsvarer minstekravet for å være i samsvar med direktivet, og er ikke til hinder for at organisasjoner dokumenterer informasjonsressursene mer utførlig med tilleggselementer avledet fra internasjonale standarder eller arbeidsmetoder innen deres interessefellesskap.

Merknad: **Tabell G.1** gir en oversikt over hvilke metadata som skal eller kan benyttes for henholdsvis data og tjenester. Dersom multiplisitet er angitt på overskriftsnivå skal minst en av de underliggende egenskapene benyttes. Det henvises til [kommisjonsforordningen](#) for nærmere beskrivelse av elementene, instruks om multiplisitet og vilkår for metadataelementene (Del C) og angivelse av verdidomene (Del D). Ytterligere metadata som kreves gjennom geonorge er spesifisert i **Tabell G.2**.

G.2 Minstekrav av metadata for å være i samsvar med direktivet

Merknad: Dette settet av metadataelementer tilsvarer minstekravet for å være i samsvar med direktivet, og er ikke til hinder for at organisasjoner dokumenterer informasjonsressursene mer utførlig med tilleggselementer avledet fra internasjonale standarder eller arbeidsmetoder innen deres interessefellesskap.

Metadata for data

METADATAELEMENT	FORKLARING	MULTIPLISITET		VILKÅR
		Data	Tjenester	
IDENTIFIKASJON				
Ressursens betegnelse	Dette er et karakteristisk og ofte unikt navn som ressursen er kjent under.	1	1	
Ressurssammendrag	Dette er et kort, beskrivende sammendrag av ressursens innhold.	1	1	
Ressurstype	Typen ressurs som metadataene beskriver	1	1	
Ressursadresse	Ressursadressen definerer lenke(n) til ressursen og/eller lenken til ytterligere opplysninger om ressursen	0..*	0..*	Ja

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Unik ressursidentifikator	En verdi som entydig identifiserer ressursen	1..*		
Ressursspråk	Språket/språkene som benyttes i ressursen.	0..*		Ja
Tilkoblet ressurs	Dersom ressursen er en geodatatjeneste, identifiserer dette metadataelementet, der dette er relevant, målgeodatassetet (- settene) til tjenesten ved hjelp av dets unike URL - adresse		0..*	Ja
KLASSIFISERING AV GEODATA OG GEODATATJENESTER				
Type geodatatjeneste	klassifisering til hjelp ved søking etter tilgjengelige geodatatjenester		1	
Emnekategori	Klassifiseringsordning på høyt nivå til hjelp ved gruppering og emnebasert søking etter tilgjengelige geodataressurser.	1..*		
NØKKEWORD				
Nøkkelordverdi	et vanlig brukt ord, formalisert ord eller frase som benyttes til å beskrive emnet			
Kontrollert opprinnelsesordliste	Dersom nøkkelordverdien har sin opprinnelse i en kontrollert ordliste (tesaurus, ontologi), for eksempel GEMET, skal det henvises til den opprinnelige kontrollerte ordlisten.			
GEOGRAFISK STED				
Geografisk avgrensingsrektangel	ressursens geografiske utstrekning, angitt som et avgrensende rektangel	1..*	0..*	Ja, for tjenester
TIDSREFERANSE				
Tidsomfang	tidsrommet som omfattes av innholdet i ressursen			
Dato for offentliggjøring	Datoen for offentliggjøring av ressursen når denne er tilgjengelig, eller ikrafttredelsesdatoen			
Dato for siste revisjon	datoen for siste revisjon av ressursen			
Dato for opprettelse	opprettelsen av ressursen			
KVALITET OG GYLDIGHET				
Historikk	prosesshistorien og/eller den helhetlige kvaliteten til geodatassetet	1		
Romlig oppløsning	datassetets detaljnivå.	0..*	0..*	Ja
SAMSVAR				
Spesifikasjon	Angivelse av gjennomføringsregler eller annen spesifisering som en bestemt ressurs er i samsvar med.	1..*	1..*	

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Grad av samsvar				
BEGRENSNING KNYTTET TIL TILGANG OG BRUK				
Vilkår for tilgang og bruk	vilkårene for tilgang og bruk av geodatasett og -tjenester	1..*	1..*	
Begrensninger av offentlig tilgang	informasjon om og grunnene for slike begrensninger	1..*	1..*	
ORGANISASJONER MED ANSVAR FOR Å OPPRETTE, FORVALTE, VEDLIKEHOLDE OG DISTRIBUERE GEODATASETT OG -TJENESTER.		2..*	2..*	Skal være av type "eier" (faglig kontakt) og "publisher" (teknisk kontakt)
Ansvarlig part	Organisasjon som har ansvar for å opprette, forvalte, vedlikeholde og distribuere ressursen.			
Den ansvarlige parts funksjon	Dette er funksjonen til den ansvarlige organisasjonen.			
METADATA OM METADATA				
Kontaktpunkt for metadata	beskrivelsen av organisasjonen som har ansvar for å opprette og vedlikeholde metadataene	1..*	1..*	
Dato for metadata	Datoen som angir når metadatasettet ble opprettet eller ajourført.	1	1	
Metadataspråk	Dette er det språk som metadataelementene blir uttrykt på.	1	1	

Tabell G.1 Minstekrav av metadata

G.3 Tilleggsmetadata for geonorge.

METADATAELEMENT	FORKLARING	MULTIPLISITET		VILKÅR
Representasjonsform ¹	Hvordan datasett er representert (vektor, raster, TIN, teksttabell, video, stereomodell)	1		
Distribusjonstype (protocol) ¹	distribusjonsform for ressursen, for eksempel OGC-standard for tjeneste (https://register.geonorge.no/metadata-kodelister/distribusjonstyper)	1..*	1..*	

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Ressursens distribusjonseenhet ¹	Angir om datasettet leveres som landsdekkende, kommunevise, fylkesvise, kartbladvise eller regionsvise filer (https://register.geonorge.no/metadata-kodelister/geografisk-distribusjonsinndeling)	0..1		
Formater ¹	Formater datasettet tilbys på (https://register.geonorge.no/metadata-kodelister/rasterformater , https://register.geonorge.no/metadata-kodelister/vektorformater)			
Lagnavn ¹	Navn på lag i WMS-tjeneste		0..*	Bare hvis metadata beskriver enkeltlag i en wms-tjeneste
Navnerom for ressuridentifikator ²	En http-URI som angir en hierarkisk struktur for ressursene (https://register.geonorge.no/navnerom)			
Mer informasjon (hjelp) ¹	Her kan en gi informasjon og veiledning om hvordan datasettet er organisert, mulige tekniske forhold ved formater og annet som gjør det lettere å ta i bruk datasettet.	0..1	NA	
URL til mer informasjon ¹	link til ekstern side eller PDF-dokument med informasjon og veiledning som gjør det lettere å ta i bruk datasettet.	0..1	NA	
Bruksområde ¹	Hvilke oppgaver datasettet kan/bør brukes til.	0..1	NA	
Formål ¹	Oppgi hvis datasettet er samlet inn med tanke på et spesielt formål. Hvis dataene ikke kan brukes til andre formål uten videre, skal dette framkomme her. Det er ikke nødvendig å legge inn noe her hvis formål ikke er definert.			
Klassifisering av geodatatjenester	Nøkkelord i henhold til den geografiske tjenestetaksonomien i EN ISO 19119 (http://inspire.ec.europa.eu/metadata-codelist/SpatialDataServiceCategory)	0	1	
Nasjonal temakategori (for geografiske data) ¹	En norsk tematisk inndeling basert på kategoriene fra det offentlige kartgrunnlaget.	1	1	
Nøkkelord for sted ¹	Fritekstfelt hvor en skriver navn på sted eller regioner som datasettet dekker	0..*	0..*	

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EU - prioriterte datasett ny	http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset	1		Skal legges inn hvis datasettet er en del av miljørapporteringa til EU
Nøkkelord for administrative enheter ¹	Referanse til URI for administrative områder i Norge	0..*	0..*	
Dekningskart ¹	Referanse til dekningskart som viser datasettets utbredelse i form av kilometerrutenett, kommunevis dekning, kartbladvis dekning, heat map eller lignende	0..3		Skal brukes hvis det finnes dekningskart over datasettets utbredelse
Oppdateringshyppighet ¹	Angivelse av intervaller for modifikasjon og andre endringer av data etter at de er etablert.	1	1	
Status ¹	Status for datasett eller datasett tjenesten opererer mot. Kodeliste	0..1	0..1	
Tjenesteerklæring ¹	For tjenester som omfattes av Norge digitalt-avtalen skal tjenesteerklæring i henhold til avtalens "generelle vilkår" oppgis.		0..1	Ja
Lisens ¹	Referanse til lisens for bruk av dataene https://register.geonorge.no/metadata-kodelister/lisenser	0..1		
Sikkerhetsnivå ¹	Sikkerhetsnivå på datasettet/datatjenesten	0..1		
Lovhenvisning ¹	Grunngiving av tilgangsbegrensninger eller bruksbegrensninger i form av juridiske forhold eller andre begrensende faktorer. Henvisning til lov, forskrift eller lignende.	0..1		
Produktspesifikasjon ¹	Lenke til produktspesifikasjon i registeret i Geonorge	1		Ja
Produktark ¹	Lenke til produktark i registeret i Geonorge	0..1		
Tegneregler ¹	Lenke til tegneregler i registeret i Geonorge	0..1		
Produktside ¹	Lenke til egen produktside	0..1		
UML-modell ¹	Lenke til produktspesifikasjon i objektregisteret i Geonorge	1		Ja

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Begreper ¹	Lenke til begreper i objektregisteret i Geonorge	0..1		
Illustrasjonsbilde ¹	Lenke til produktspesifikasjon i registeret i Geonorge	1	1	
ADMINISTRATIVT				
Høsting ³	Angivelse av hvilke portaler som direkte skal kunne høste metadatasettet	0..*		
Underlagt avtale ³	Angivelse over hvilke avtaler eller lover datasettet faller inn under	0..*		

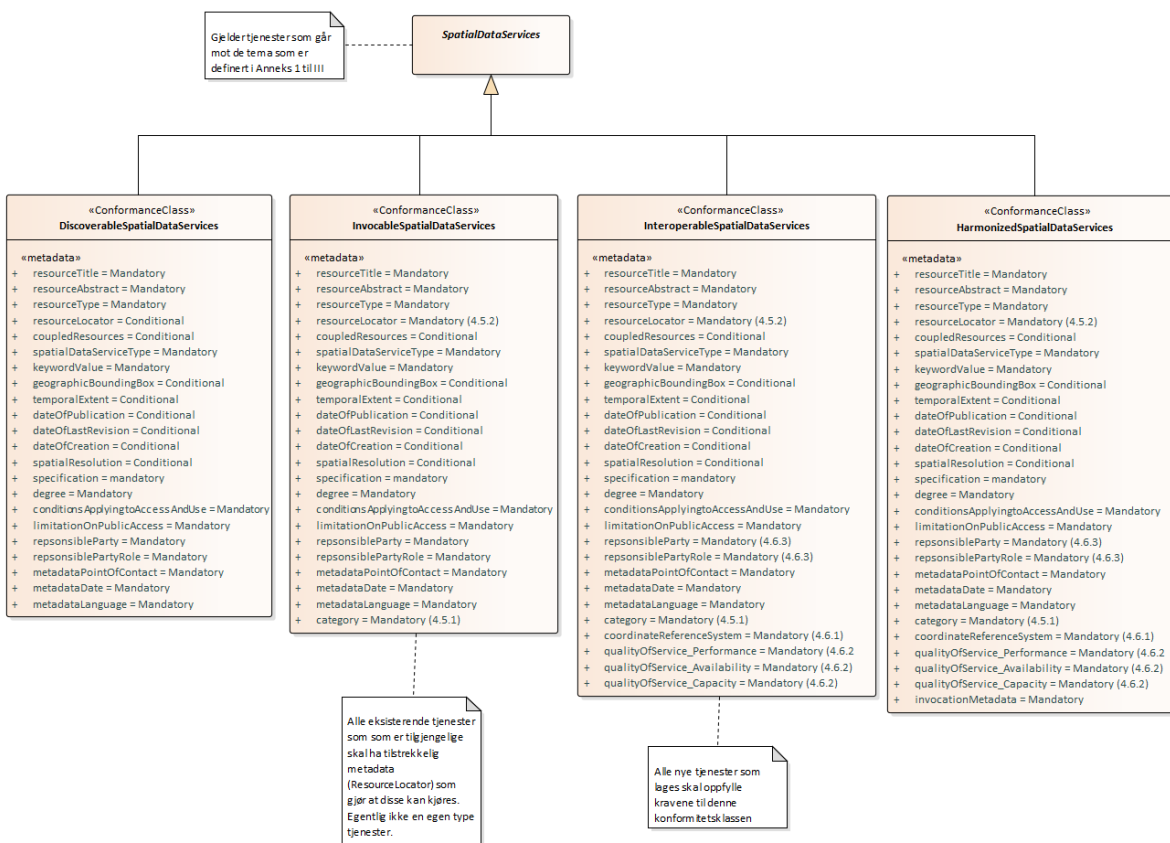
Tabell G.2 Tilleggsmetadata for geonorge

Vedlegg H - Metadatakrav for “Spatial Data Services”

Figuren er basert på følgende dokumenter:

- [COMMISSION REGULATION \(EC\) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata](#)
- [KOMMISJONSFORORDNING \(EU\) nr. 1312/2014 av 10. desember 2014 om endring av forordning \(EU\) nr. 1089/2010 om gjennomføring av europaparlaments- og rådsdirektiv 2007/2/EF med hensyn til samvirkingsevnen til geodatatjenester](#)

Aktiverbare, interoperable og harmoniserte tjenester har metadataegenskaper som går ut over de generelle krav til metadata for tjenester som er tilgjengelig i infrastrukturen, angitt i Figur H.1



Figur H.1 Metadata for ulike typer tjenester

Alle aktiverbare tjenester skal ha et metadataelement kalt kategori (category). Verdidomene for dette elementet er:

1. Aktiverbar (invocable). Geodatatjenesten er en aktiverbar geodatatjeneste.

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2. Samvirkende (interoperable). Den aktiverbare geodatatenesten er en samvirkende geodatateneste.
3. Harmonisert (harmonised). Den samvirkende geodatatenesten er en harmonisert geodatateneste.

Alle interoperable (eller samvirkende) tjenester skal i tillegg har identifikator for koordinatbaserte referansesystemer (coordinateReferenceSystem) samt tjenestekvalitet (quality of service).

Alle harmoniserte geodatatenester skal i tillegg ha metadataelementet «Metadata for aktivering» (InvocationMetadata), samt en rekke operasjoner.