1. Executive Summary

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2. Introduction

2.1. History of Development

2.2. Intended Purpose

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2.3. Design Principles

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2.4. Conceptual System Environment

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3. SPASE Data Model

3.1. Resource Types

3.1.1. Data Resources

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3.1.2. Origination Resources

3.1.3. Infrastructure Resources

3.1.4. Ontology

3.2. Resource Identifiers

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3.3. Core Attributes

3.4. Text Mark-up

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3.4.1 Normalization Rules

Text Interpretation Rules

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3.5. Extensions

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4. Guidelines for Metadata Descriptions

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5. Examples

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```
<?xml version="1.0" encoding="UTF-8" ?>
<Spase>
  <Version>2.0.0</Version>
   <Person>
     <ResourceID>spase://person/jsmith@smith.org</ResourceID>
     <PersonName>John Smith</PersonName>
     <OrganizationName>Smith Foundation</OrganizationName>
     <Address>1 Main St., Smithville, MA</Address>
     <Email>jsmith@smith.org</Email>
     <PhoneNumber>1-800-555-1212</PhoneNumber>
  </Person>
</Spase>
```

```
<?xml version="1.0" encoding="UTF-8" ?>
<Spase>
  <Version>2.0.0</Version>
  <NumericalData>
     <ResourceID>spase://VMO/NumericalData/ACE/MAG/200301</ResourceID>
     <ResourceHeader>
        <ResourceName>ACEMAG200301</ResourceName>
        <ReleaseDate>2006-07-26T00:00:00.000</ReleaseDate>
        <Acknowledgement>
           User will acknowledge the data producer and instrument P.I. in any
           publication resulting from the use of these data.
        </Acknowledgement>
      <Description>
         ACE MFI 1-minute averaged magnetic-field data in GSE coordinates
         from Jan 2003. These data have been derived from the 16 second
         resolution ACE MFI which were linearly interpolated to a 1-minute
         time grid with time stamps at second zero of each minute.
      </Description>

      <Contact>
         <Role>PrincipalInvestigator</Role>
         <PersonID>spase://SMWG/Person/Norman.F.Ness</PersonID>
      </Contact>

      <Contact>
         <Role>Co-Investigator</Role>
         <PersonID>spase://SMWG/Person/Charles.Smith</PersonID>
      </Contact>

      <Contact>
         <Role>DataProducer</Role>
         <PresonID>spase://SMWG/Person/James.M.Weygand</PresonID>
      </Contact>
   </ResourceHeader>
```

```
<AccessInformation>
   <AccessRights>Open</AccessRights>
   <AccessURL>
      <URL>http://www.igpp.ucla.edu/getResource?format=text&id=spase://UCLA/ACEMAG200301</URL>
   </AccessURL>
   <Format>Text</Format>
   <Encoding>GZIP</Encoding>
</AccessInformation>

<InstrumentID>spase://SMWG/ACE/MAG</InstrumentID>
<MeasurementType>MagneticField</MeasurementType>

<TemporalDescription>
   <TimeSpan>
     <StartDate>1997-01-01T00:00</StartDate>
     <StopDate>2004-01-31T23:59</StopDate>
   </TimeSpan>
   <Cadence>PT1M</Cadence>
</TemporalDescription>

<InstrumentRegion>Heliosphere.NearEarth</InstrumentRegion>
<ObservedRegion>Heliosphere.NearEarth</ObservedRegion>

<Parameter>
   <Name>SAMPLE_TIME_UTC</Name>
   <ParameterKey>time</ParameterKey>
   <Description>
    Sample UTC in the form DD MM YYYY hh mm ss where
      DD   = day of month (01-31)
      MM   = month of year (01-12)
      YYYY = Gregorian Year AD
      hh   = hour of day     (00:23)
      mm   = minute of hour  (00-59)
      ss   = second of minute (00-60).
   </Description>
   <Support>
     <SuportQuantity>Temporal</SuportQuantity>
   </Support>
</Parameter>

<Parameter>
   <Name>MAGNETIC_FIELD_VECTOR</Name>
   <Units>nT</Units>
   <CoordinateSystem>
      <CoordinateRepresentation>Cartesian</CoordinateRepresentation>
      <CoordinateSystemName>GSE</CoordinateSystemName>
   </CoordinateSystem>
   <Description>
       Magnetic field vector in GSE Coordinates (Bx, By, Bz).
   </Description>
   <Field>
      <Qualifier>Vector</Qualifier>
      <FieldQuantity>Magnetic</FieldQuantity>
  </Field>
</Parameter>

<Parameter>
   <Name>SPACECRAFT_POSITION_VECTOR</Name>
   <CoordinateSystem>
      <CoordinateRepresentation>Cartesian</CoordinateRepresentation>
      <CoordinateSystemName>GSE</CoordinateSystemName>
   </CoordinateSystem>
   <Units>EARTH RADII</Units>
   <UnitsConversion>6378.16 km</UnitsConversion>
```

```
      <Description>
         ACE spacecraft location in GSE coordinates (X,Y,Z)."
      </Description>
      <Support>
        <SuportQuantity>Positional</SupportQuantity>
      </Support>
   </Parameter>

  </NumericalData>
</Spase>
```

6. Element Data Types

Container

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Count

DateTime

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Duration

Enumeration

Item

Numeric

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Sequence

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Text

" " " "

URL

ID

7. Enumerations

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AccessRights

AdiabaticInvariant

AnnotationType

AssociationType

Availability

ClassificationMethod

Component

ConfidenceRating

CoordinateRepresentation

CoordinateSystemName

DirectionAngle

DirectionCosine

DisplayType

DocumentType

Earth

Encoding

FieldQuantity

Format

Hardcopy

HashFunction

Heliosphere

InstrumentType

Integral

Ionosphere

Jupiter

Magnetosphere

Mars

MeasurementType

Mercury

MixedQuantity

NearSurface

Neptune

ParticleQuantity

ParticleType

PhenomenonType

Projection

Venus

Qualifier

Region

RenderingAxis

Role

Saturn

ScaleType

SourceType

SpectralRange

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Style

Sun

SupportQuantity

Text

WaveQuantity

WaveType

Waves

8. Data Model Tree

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9. Dictionary

How to Read a Definition

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10. History

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11. Bibliography

12. Appendix A - Comparison of Spectrum Domains