Scott Pilgrim RDF Conceptual Model

A formal metadata representation of the Scott Pilgrim universe using standard vocabularies and ontologies.

1. Introduction

This document presents a conceptual model for describing resources within the Scott Pilgrim universe. The model leverages existing semantic web standards and vocabularies including Dublin Core Terms (DCTerms), Schema.org, Music Ontology (MO), FOAF (Friend of a Friend), OWL (Web Ontology Language), and domain-specific relationship vocabularies. This approach ensures interoperability and reusability of metadata across systems while maintaining semantic clarity through formal ontological definitions.

2. Ontological Foundation

2.1 Core Vocabularies

The conceptual model integrates the following established vocabularies:

Vocabulary	Namespace	Purpose
Dublin Core Terms	dcterms: (http://purl.org/dc/terms/)	Cross-domain resource description (title, creator, date, format, language, identifier)
Schema.org	schema: (https://schema.org/)	Structured data for characters, creative works, events, and organizations
FOAF	foaf: (http://xmlns.com/foaf/0.1/)	Person and organization representation with social relationships
Music Ontology	mo: (http://purl.org/ontology/mo/)	Musical works, performances, albums, and artists
W3C OWL	owl: (http://www.w3.org/2002/07/owl#)	Semantic equivalences and formal class relationships
Relationship Vocabulary	rel: (http://purl.org/vocab/relationship/)	Interpersonal and organizational relationships
W3C ORG	org: (http://www.w3.org/ns/org#)	Organizational membership and structure

2.2 Formal Constraints

The model employs OWL constructs to express semantic constraints:

- **owl:sameAs**: Establishes identity relationships with external knowledge bases (Wikidata, MusicBrainz, IMDB)
- **rdf:type** (represented as a): Assigns resources to formal classes

- **rdfs:subClassOf**: Creates hierarchical relationships between classes
- **Domain and Range**: Constrains property application to specific resource types

3. Entity Classes

3.1 Fictional Characters

Class Definition: schema:FictionalCharacter

Characters are modeled as fictional agents with attributes:

Property	Range	Semantics
foaf:name	Literal	Character's canonical name
schema:roleName	Literal	Narrative function (Protagonist, Antagonist, Support)
schema:portrayedBy	foaf:Person	Actor portrayal link
rel:lifePartnerOf	schema:FictionalCharacter	Romantic relationships
rel:friendOf	schema:FictionalCharacter	Friendship relationships
rel:ambivalentOf	schema:FictionalCharacter	Complex/ambiguous relationships
org:memberOf	org:Organization	Group memberships
dcterms:isPartOf	schema:Intangible	Universe membership
owl:sameAs	IRI	Wikidata/external references
foaf:page	IRI	Fandom wiki documentation

Table 1: Scott Pilgrim Character Properties

3.2 Creative Works

Class Definitions: schema:Movie, schema:TVSeries, schema:ComicSeries, schema:VideoGame, schema:MusicRecording, schema:MusicAlbum

Creative works use Dublin Core Terms for administrative metadata and Schema.org for descriptive metadata:

Property	Range	Semantics
dcterms:title	Literal	Official title
dcterms:identifier	IRI	Wikidata ID reference
schema:datePublished	xsd:gYear	Release date
schema:author	foaf:Person	Creative responsibility (writing)
schema:director	foaf:Person	Creative responsibility (direction)
schema:genre	Literal	Content categorization
schema:isBasedOn	schema:CreativeWork	Adaptation relationship
schema:performer	foaf:Person OR mo:MusicGroup	Performance involvement
owl:sameAs	IRI	External resource equivalence
dcterms:format	Literal	Media type (MIME specification)

Table 2: Creative Works Core Properties

3.3 Musical Entities

Class Definitions: mo:MusicGroup, schema:MusicRecording, schema:MusicAlbum

Music-specific resources employ Music Ontology constructs:

- **mo:genre**: Genre classification
- **mo:performer**: Group or artist involvement
- **mo:publisher**: Record label or distributor
- **dcterms:isPartOf**: Album/soundtrack containment relationships

3.4 Organizations

Class Definition: foaf:Organization or org:Organization

Organizations represent both narrative entities (bands, evil ex organizations) and real-world entities (production companies, broadcasters):

- **foaf:name**: Organization canonical name
- **dcterms:description**: Organizational role or function
- **org:memberOf**: Hierarchical organizational relationships

3.5 Physical Objects and Places

Class Definitions: schema:PhysicalObject, schema:LandmarksOrHistoricalBuildings

Material culture and locations:

- **foaf:name**: Entity designation
- **schema:material**: Physical composition
- **schema:color**: Visual properties
- **schema:dateCreated**: Temporal attribution
- **dcterms:isPartOf**: Narrative universe membership

4. Relationship Model

4.1 Character-to-Character Relationships

Relationships employ the Relationship Vocabulary with semantic specificity:

rel:lifePartnerOf → Romantic partnership (symmetric)
rel:friendOf → Friendly association (typically non-exclusive)
rel:ambivalentOf → Complex/unresolved relationship type
rel:antagonistOf → Narrative opposition (asymmetric)
rel:livesWith → Cohabitation (not romantic)
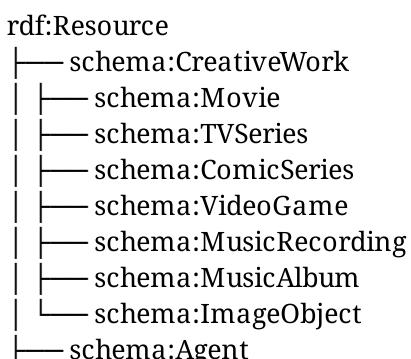
4.2 Organizational Relationships

org:memberOf → Formal organizational inclusion
dcterms:isPartOf → Narrative universe or collection membership
rel:ambivalentOf → Organizational ambiguity (e.g., ex relationships)
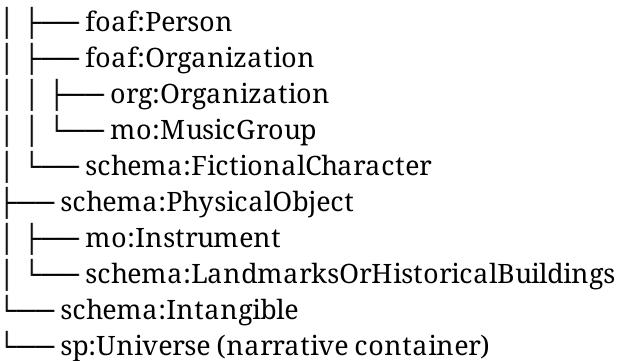
4.3 Creative Attribution

schema:author → Intellectual creation responsibility
schema:director → Directorial creative control
schema:screenwriter → Script authorship
schema:performer → Performance participation (music, acting)
schema:portrayedBy → Fictional-to-real actor mapping

5. Formal Class Hierarchy

5.1 Resource Classification

```
rdf:Resource
├── schema:CreativeWork
│   ├── schema:Movie
│   ├── schema:TVSeries
│   ├── schema:ComicSeries
│   ├── schema:VideoGame
│   ├── schema:MusicRecording
│   ├── schema:MusicAlbum
│   └── schema:ImageObject
├── schema:Agent
```

```
|   ├── foaf:Person
|   ├── foaf:Organization
|   |   ├── org:Organization
|   |   └── mo:MusicGroup
|   └── schema:FictionalCharacter
├── schema:PhysicalObject
|   ├── mo:Instrument
|   └── schema:LandmarksOrHistoricalBuildings
└── schema:Intangible
└── sp:Universe (narrative container)
```

5.2 Datatype Specifications

- **xsd:gYear**: Year literals (e.g., "2010"^^xsd:gYear)
- **xsd:nonNegativeInteger**: Numeric counts (episodes, volumes)
- **rdfs:Literal**: Plain text values
- **IRI**: URI resources (owl:sameAs targets, foaf:page values)

6. Semantic Equivalence Declarations

The model establishes identity relationships with external knowledge bases:

Wikidata	Characters, creators, and major works linked via owl:sameAs to Wikidata entities (Q-identifiers)
MusicBrainz	Albums and recordings linked via MusicBrainz release identifiers
IMDB	Creative works cross-referenced through third-party identifiers
Fandom Wiki	Character and organization pages preserved as foaf:page documentation links
Schema.org	Structured data alignment for search engine compatibility

7. Application Profile: Scott Pilgrim Universe

7.1 Core Entity Instances

The model instantiates approximately 40 formal entities including:

- **6 primary protagonists/antagonists** (Scott Pilgrim, Ramona Flowers, 6 evil exes)
- **8 supporting characters** (Wallace Wells, Kim Pine, Stephen Stills, Neil Nordegraf, Envy Adams, Knives Chau, and others)
- **6 creative media adaptations** (Comic series, film, game, anime)
- **12+ musical recordings** (Soundtrack tracks, album references)
- **4 organizational entities** (Sex Bob-Omb, Clash at Demonhead, League of Evil Exes, Amazon.ca)
- **3 physical cultural objects** (Bass guitar, screenplay, movie poster)
- **1 landmark location** (Casa Loma, Toronto)

7.2 Cross-Domain Mapping

Resources span multiple ontological domains:

Domain	Examples	Vocabulary Primary
Characters	Scott Pilgrim, Ramona Flowers	Schema.org + FOAF
Music	Sex Bob-Omb, Soundtrack recordings	Music Ontology + DCTerms
Film/TV	Movie, anime series, video game	Schema.org + DCTerms
Organizations	Bands, evil ex collective	FOAF/ORG + Relationship
Places	Casa Loma location	Schema.org + DCTerms
Attribution	Authors, directors, performers	Dublin Core + Schema.org

8. SKOS Vocabulary Considerations

While the current model emphasizes RDFS/OWL class and property definitions, extensible vocabulary control could employ SKOS (Simple Knowledge Organization System):

- **skos:Concept**: Genre classifications (Indie Rock, Garage Rock, Punk)
- **skos:ConceptScheme**: Narrative role vocabulary (Protagonist, Antagonist, Support)
- **skos:broader/narrower**: Hierarchical genre refinement
- **skos:related**: Cross-references between related concepts

9. Validation and Consistency Rules

9.1 OWL Constraints

The model enforces semantic consistency through:

- **Functional properties**: Each character has exactly one canonical name (foaf:name)
- **Inverse properties**: If character A is rel:lifePartnerOf character B, then B is rel:lifePartnerOf A
- **Disjoint classes**: Fictional characters are formally distinct from real persons (foaf:Person)
- **Type consistency**: All property ranges conform to declared rdfs:range specifications

9.2 Domain-Specific Integrity

- Every character must belong to dcterms:isPartOf sp:universe_scott_pilgrim
- All creative works must specify dcterms:title, schema:datePublished
- Musical recordings must reference parent album via dcterms:isPartOf
- All external entities should declare owl:sameAs equivalences where possible

10. Extensibility and Maintenance

10.1 Future Vocabulary Integration

The model accommodates:

- **FRBR (Functional Requirements for Bibliographic Records)**: For detailed work/expression/manifestation distinctions
- **EDM (Europeana Data Model)**: For cultural heritage integration
- **RDA (Resource Description and Access)**: For enhanced bibliographic description
- **EACCPF**: For detailed authority control of persons and corporate bodies

10.2 Maintenance Practices

- Wikidata identifiers updated quarterly via owl:sameAs validation
- MusicBrainz release IDs verified for soundtrack accuracy
- Character relationship assertions reviewed against canonical source material
- Namespace declarations maintained for all imported vocabularies

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