Task Hierarchy Structure Breakdown:

1. High-level Goal Tasks These are the broad, overarching objectives extracted from the user's entire prompt. In your example prompt "what is 7 \* 7, the author of the harry potter books, what is the capital of france and build a model", the high-level goals are:

* Perform a mathematical calculation
* Retrieve general knowledge about Harry Potter
* Find out the capital of France
* Create an energy model

Think of these as the "big picture" intentions behind the user's request.

1. Mid-level Functional Tasks These are more specific sub-tasks that break down how to achieve each high-level goal. They involve:

* Identifying the specific type of function needed
* Determining which agent or system can best handle the task
* Preparing the necessary parameters

Examples from your prompt:

* Math Calculation Task:
  + Recognize it's a mathematical computation
  + Categorize as "do\_maths" function
  + Prepare for calculation
* Harry Potter Author Task:
  + Recognize it's a general knowledge query
  + Categorize as "general\_question"
  + Prepare to search for information
* Energy Model Task:
  + Recognize it requires model creation
  + Categorize as "Energy Model"
  + Collect additional parameters (location, generation type, etc.)

1. Atomic Function-level Tasks These are the most granular, specific actions that actually execute the task:

* Actual computation (e.g., 7 \* 7 = 49)
* Specific API or LLM call to retrieve information
* Precise steps to generate a model
* Exact function execution with specific inputs

Examples:

* Math Calculation:
  + Use eval() to calculate 7 \* 7
  + Return the specific result (49)
* General Knowledge:
  + Use LLM to retrieve exact information
  + Return specific details about Harry Potter author or France's capital
* Energy Model:
  + Collect exact user-specified parameters
  + Generate XML with precise specifications
  + Save model to a specific file location

The hierarchy is like a Russian nesting doll:

* Outermost layer: Overall goals
* Middle layer: How to achieve those goals
* Innermost layer: Exact steps to complete each task

This approach allows the system to:

* Break down complex, multi-part requests
* Dynamically assign appropriate agents
* Handle each subtask with precision
* Provide a comprehensive, structured response

Flow Chart Alignment: The process closely follows the flow chart, with key steps including:

1. User Prompt Intake
2. Coordination Agent (Nova) Processing
3. Multiple Intent Identification
4. Task Categorization
5. Parameter Collection
6. Task Delegation
7. Function Execution
8. Results Aggregation
9. Final Output Generation

Observations:

* Successfully handled multiple, diverse tasks in a single prompt
* Dynamically collected missing parameters for the energy model
* Used different agents for different task types
* Provided a comprehensive final output combining all task results

The implementation demonstrates the flow chart's principles of:

* Recursive task breakdown
* Front-loaded user interaction
* Dynamic task priority and execution
* Error handling and result aggregation

OutPut:

PLEXOS libraries not available - will create simple XML instead

FUNCTION CALL: utils.csv\_function\_mapper.register\_functions

FUNCTION CALL: utils.csv\_function\_mapper.load\_function\_map

Error loading function map for Nova: Error tokenizing data. C error: Expected 11 fields in line 7, saw 21

FUNCTION CALL: utils.csv\_function\_mapper.load\_function\_map

Successfully loaded 11 functions for agent Emil

FUNCTION CALL: utils.csv\_function\_mapper.load\_function\_map

Warning: Function 'iterate\_and\_display\_steps.iterate\_and\_display\_steps' is not registered for key 'iterate\_and\_display\_steps'

Successfully loaded 1 functions for agent Ivan

FUNCTION CALL: utils.csv\_function\_mapper.load\_function\_map

Warning: Function 'Create\_social\_post.linkedIn' is not registered for key 'create\_linked\_in\_post'

Warning: Function 'Create\_social\_post.Twitter' is not registered for key 'create\_twitter\_post'

Warning: Function 'Create\_social\_post.facebook' is not registered for key 'create\_facebook\_post'

Warning: Function 'proof\_reading\_agent.main' is not registered for key 'Proofreader'

Warning: Function 'copywriting\_agent\_dev.main' is not registered for key 'copywriter'

Warning: Function 'Prompt\_sheet.main' is not registered for key 'Prompt Sheet'

Warning: Function 'uncategorized\_call.uncategorized\_call' is not registered for key 'Uncategorised'

Successfully loaded 1 functions for agent Lola

FUNCTION CALL: utils.open\_ai\_utils.get\_api\_key

FUNCTION CALL: utils.open\_ai\_utils.get\_api\_key

FUNCTION CALL: \_\_main\_\_.main

Loading function maps from CSV files...

FUNCTION CALL: utils.csv\_function\_mapper.register\_functions

FUNCTION CALL: utils.csv\_function\_mapper.load\_function\_map

Error loading function map for Nova: Error tokenizing data. C error: Expected 11 fields in line 7, saw 21

FUNCTION CALL: utils.csv\_function\_mapper.load\_function\_map

Successfully loaded 11 functions for agent Emil

FUNCTION CALL: utils.csv\_function\_mapper.load\_function\_map

Warning: Function 'iterate\_and\_display\_steps.iterate\_and\_display\_steps' is not registered for key 'iterate\_and\_display\_steps'

Successfully loaded 1 functions for agent Ivan

FUNCTION CALL: utils.csv\_function\_mapper.load\_function\_map

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Warning: Function 'proof\_reading\_agent.main' is not registered for key 'Proofreader'

Warning: Function 'copywriting\_agent\_dev.main' is not registered for key 'copywriter'

Warning: Function 'Prompt\_sheet.main' is not registered for key 'Prompt Sheet'

Warning: Function 'uncategorized\_call.uncategorized\_call' is not registered for key 'Uncategorised'

Successfully loaded 1 functions for agent Lola

REGISTERED FUNCTIONS FOR NOVA: ['open\_website', 'do\_maths', 'answer\_general\_question', 'ai\_chat\_session', 'ai\_spoken\_chat\_session', 'process\_emil\_request']

User prompt: what is 7 \* 7, the author of the harry potter books, what is the capital of france and build a model

FUNCTION CALL: agents.nova.create\_task\_list\_from\_prompt

FUNCTION CALL: agents.nova.identify\_multiple\_intents

FUNCTION CALL: utils.open\_ai\_utils.run\_open\_ai\_ns

Identified 4 intent(s) in the prompt:

Intent 1: what is 7 \* 7

Intent 2: the author of the harry potter books

Intent 3: what is the capital of france

Intent 4: build a model

FUNCTION CALL: utils.open\_ai\_utils.open\_ai\_categorisation

⚠️ Pre-check identified math problem: 'what is 7 \* 7'

Intent 'what is 7 \* 7' categorized as: do\_maths

FUNCTION CALL: agents.nova.create\_task\_for\_category

FUNCTION CALL: utils.open\_ai\_utils.open\_ai\_categorisation

✅ OpenAI categorization: general\_question

Intent 'the author of the harry potter books' categorized as: general\_question

FUNCTION CALL: agents.nova.create\_task\_for\_category

FUNCTION CALL: utils.open\_ai\_utils.open\_ai\_categorisation

✅ OpenAI categorization: general\_question

Intent 'what is the capital of france' categorized as: general\_question

FUNCTION CALL: agents.nova.create\_task\_for\_category

FUNCTION CALL: utils.open\_ai\_utils.open\_ai\_categorisation

⚠️ Pre-check identified energy modeling request: 'build a model'

Intent 'build a model' categorized as: Energy Model

FUNCTION CALL: agents.nova.create\_task\_for\_category

FUNCTION CALL: core.functions\_registery.extract\_model\_parameters

Extracting model parameters from prompt...

Extracted parameters: {'locations': [], 'generation\_types': [], 'energy\_carriers': [], 'model\_type': 'single'}

Nova needs additional information for intent: build a model

FUNCTION CALL: agents.nova.get\_energy\_parameters\_from\_user

Nova will collect some information about your energy model...

FUNCTION CALL: utils.open\_ai\_utils.run\_open\_ai\_ns

Nova: Which geographic location do you want to consider for your energy model? Your options include UK, France, Spain, Germany, Italy, Portugal, Belgium, Netherlands, Greece, Croatia, Sweden, Norway, Denmark, Finland, Ireland, Switzerland, Austria, or you can choose 'all' if you'd like to model every available location.

> all

FUNCTION CALL: utils.open\_ai\_utils.run\_open\_ai\_ns

Nova: Hi there! Could you let me know which type of energy generation you'd like to focus on in your model? Your options are solar, wind, hydro, thermal, bio, or you can choose all if you'd like to include every type.

> wind

FUNCTION CALL: utils.open\_ai\_utils.run\_open\_ai\_ns

Nova: Could you please let me know which energy carrier you'd like to use in your energy model: electricity (default), hydrogen, or methane?

> methane

Nova will process 4 tasks from your request:

📋 Task 1/4: Handle Intent: what is 7 \* 7...

Nova is delegating task: Handle Intent: what is 7 \* 7... to Nova

FUNCTION CALL: agents.nova.handle\_task

Nova handling task: Handle Intent: what is 7 \* 7... with function: do\_maths

Available functions in Nova: ['open\_website', 'do\_maths', 'answer\_general\_question', 'ai\_chat\_session', 'ai\_spoken\_chat\_session', 'process\_emil\_request']

Executing function: do\_maths

FUNCTION CALL: utils.do\_maths.do\_maths

Calculating mathematical expression: what is 7 \* 7

Math calculation result: The result of 7 \* 7 is 49

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📋 Task 2/4: Handle Intent: the author of the harry potter...

Nova is delegating task: Handle Intent: the author of the harry potter... to Nova

FUNCTION CALL: agents.nova.handle\_task

Nova handling task: Handle Intent: the author of the harry potter... with function: answer\_general\_question

Available functions in Nova: ['open\_website', 'do\_maths', 'answer\_general\_question', 'ai\_chat\_session', 'ai\_spoken\_chat\_session', 'process\_emil\_request']

Executing function: answer\_general\_question

FUNCTION CALL: utils.general\_knowledge.answer\_general\_question

Answering general knowledge question: the author of the harry potter books

Sending request to LLM...

FUNCTION CALL: utils.open\_ai\_utils.run\_open\_ai\_ns

Received response from LLM

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📋 Task 3/4: Handle Intent: what is the capital of france...

Nova is delegating task: Handle Intent: what is the capital of france... to Nova

FUNCTION CALL: agents.nova.handle\_task

Nova handling task: Handle Intent: what is the capital of france... with function: answer\_general\_question

Available functions in Nova: ['open\_website', 'do\_maths', 'answer\_general\_question', 'ai\_chat\_session', 'ai\_spoken\_chat\_session', 'process\_emil\_request']

Executing function: answer\_general\_question

FUNCTION CALL: utils.general\_knowledge.answer\_general\_question

Answering general knowledge question: what is the capital of france

Sending request to LLM...

FUNCTION CALL: utils.open\_ai\_utils.run\_open\_ai\_ns

Received response from LLM

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📋 Task 4/4: Handle Intent: build a model...

Nova is delegating task: Handle Intent: build a model... to Emil

FUNCTION CALL: agents.emil.handle\_task

Emil handling task: Handle Intent: build a model...

FUNCTION CALL: agents.emil.verify\_parameters

FUNCTION CALL: core.functions\_registery.process\_emil\_request

Emil processing request with prompt: build a model

FUNCTION CALL: core.functions\_registery.extract\_model\_parameters

Extracting model parameters from prompt...

Extracted parameters: {'locations': [], 'generation\_types': [], 'energy\_carriers': [], 'model\_type': 'single'}

Using all available locations (17 locations)

Creating model with:

- Locations: spain, uk, france, germany, italy, portugal, belgium, netherlands, greece, croatia, sweden, norway, denmark, finland, ireland, switzerland, austria

- Generation Types: Onshore Wind, Onshore Wind Expansion, Offshore Wind Radial

- Energy Carriers: methane

Creating a comprehensive model...

FUNCTION CALL: core.functions\_registery.create\_comprehensive\_model

Creating comprehensive model for Onshore Wind, Onshore Wind Expansion, Offshore Wind Radial (Methane) in Spain, Uk, France, Germany, Italy, Portugal, Belgium, Netherlands, Greece, Croatia, Sweden, Norway, Denmark, Finland, Ireland, Switzerland, Austria

PLEXOS not available or basefile not found, creating simple comprehensive XML...

FUNCTION CALL: core.functions\_registery.create\_simple\_comprehensive\_xml

✅ Created simple comprehensive XML: d:\Tera-joule\Terajoule - Terajoule\Projects\AI Architecture\AI Assistants\Nova - AI Coordinator v2\src\core\models\Comprehensive\_Model\_20250328\_121527.xml

Gathering all task results...

Task 1: Handle Intent: what is 7 \* 7...

Result found: The result of 7 \* 7 is 49...

Task 2: Handle Intent: the author of the harry potter...

Result found: The Harry Potter books were written by J.K. Rowlin...

Task 3: Handle Intent: what is the capital of france...

Result found: The capital of France is Paris....

Task 4: Handle Intent: build a model...

Result found: {'status': 'success', 'message': 'Created comprehe...

Combining 4 results...

===== FINAL OUTPUT =====

----------------------------------------The result of 7 \* 7 is 49

The Harry Potter books were written by J.K. Rowling, a British author.

The capital of France is Paris.

{'status': 'success', 'message': 'Created comprehensive model with 3 generation types for 17 locations', 'details': 'Generation types: Onshore Wind, Onshore Wind Expansion, Offshore Wind Radial; Locations: Spain, Uk, France, Germany, Italy, Portugal, Belgium, Netherlands, Greece, Croatia, Sweden, Norway, Denmark, Finland, Ireland, Switzerland, Austria; Carriers: Methane', 'file': 'd:\\Tera-joule\\Terajoule - Terajoule\\Projects\\AI Architecture\\AI Assistants\\Nova - AI Coordinator v2\\src\\core\\models\\Comprehensive\_Model\_20250328\_121527.xml', 'locations': ['Spain', 'Uk', 'France', 'Germany', 'Italy', 'Portugal', 'Belgium', 'Netherlands', 'Greece', 'Croatia', 'Sweden', 'Norway', 'Denmark', 'Finland', 'Ireland', 'Switzerland', 'Austria'], 'generation\_types': ['Onshore Wind', 'Onshore Wind Expansion', 'Offshore Wind Radial'], 'energy\_carriers': ['Methane']}