

Relatório de Testes de Integração com Inven!RA

Data: 2025-12-30T17:24:51.836Z

Teste: Obter Configuração (Inven!RA)

- **URL:** /config
- **Método:** GET
- **Status:** 200 OK
- **Duração:** 58ms
- **Resposta:**

```
<div>
  <h3>ObjectTwins Configuração</h3>
  <form>
    <input type="hidden" name="activityKind" value="Modelagem3D" />
    <label>gravity</label>
    <input type="number" name="gravity" value="9.8" step="0.1" />
    <label>friction_coefficient</label>
    <input type="number" name="friction_coefficient" value="0.3" min="0" max="1" step="0.01" />
    <label>time_scale</label>
    <select name="time_scale">
      <option value="0.5">0.5</option>
      <option value="1.0" selected>1.0</option>
    ... (truncated)
```

Teste: Obter Parâmetros JSON

- **URL:** /json-params
- **Método:** GET
- **Status:** 200 OK
- **Duração:** 4ms
- **Resposta:**


```
        "sphere",
        "cylinder",
        "custom_3d"
    ],
},
"max_objects_per_session": {
    "name": "max_objects_per_session",
    "type": "integer",
    "value": 20
},
"allow_3d_import": {
    "name": "allow_3d_import",
    "type": "boolean",
    "value": true
},
"supported_formats": {
    "name": "supported_formats",
    "type": "array",
    "items": [
        "gltf",
        "obj",
        "fbx"
    ]
}
},
"materials_database": {
    "enabled": {
        "name": "enabled",
        "type": "boolean",
        "value": true
    },
    "predefined_materials": {
        "name": "predefined_materials",
        "type": "array",
        "items": [
            {
                "name": "pencil",
                "composition": {
                    "wood": 0.37,
                    "carbon": 0.6,
                    "rubber": 0.03
                },
                "density": 1.8,
                "elasticity": 0.4,
                "resistance_mpa": 50
            },
        ]
    }
}
```

```
{
    "name": "steel",
    "composition": {
        "iron": 0.98,
        "carbon": 0.02
    },
    "density": 7.85,
    "elasticity": 0.3,
    "resistance_mpa": 400
},
{
    "name": "rubber",
    "composition": {
        "natural_rubber": 0.85,
        "sulfur": 0.15
    },
    "density": 0.92,
    "elasticity": 0.9,
    "resistance_mpa": 10
}
],
},
"allow_custom_composition": {
    "name": "allow_custom_composition",
    "type": "boolean",
    "value": true
},
"collision_simulation": {
    "enabled": {
        "name": "enabled",
        "type": "boolean",
        "value": true
    },
    "damage_model": {
        "name": "damage_model",
        "type": "string",
        "value": "linear_degradation"
    },
    "collision_detection_frequency": {
        "name": "collision_detection_frequency",
        "type": "integer",
        "value": 60
    },
    "record_collision_events": {
        "name": "record_collision_events",
        "type": "boolean",
        "value": false
    }
}
```

```

    "type": "boolean",
    "value": true
  },
  "data_export": {
    "enabled": {
      "name": "enabled",
      "type": "boolean",
      "value": true
    },
    "formats": {
      "name": "formats",
      "type": "array",
      "items": [
        "csv",
        "json"
      ]
    },
    "include_trajectories": {
      "name": "include_trajectories",
      "type": "boolean",
      "value": true
    },
    "include_collision_log": {
      "name": "include_collision_log",
      "type": "boolean",
      "value": true
    }
  }
}

```

Teste: Obter Catálogo de Analíticas

- **URL:** /analytics-list
- **Método:** GET
- **Status:** 200 OK
- **Duração:** 2ms
- **Resposta:**

```
{  
  "session_metadata": {  
    "name": "session_metadata",  
    "type": "object",  
    "user_id_inven_ra": "string",  
    "activity_instance_id": "string",  
    "session_start_timestamp": "ISO8601",  
    "session_end_timestamp": "ISO8601",  
    "duration_minutes": "number"  
  },  
  "quantitativos": {  
    "total_objects_created": {  
      "name": "total_objects_created",  
      "type": "integer",  
      "value": "integer",  
      "description": "Número total de twins criados na sessão"  
    },  
    "objects_by_material_category": {  
      "name": "objects_by_material_category",  
      "type": "object",  
      "properties": {  
        "steel": "integer",  
        "wood": "integer",  
        "rubber": "integer",  
        "composite": "integer"  
      }  
    },  
    "total_simulations_executed": {  
      "name": "total_simulations_executed",  
      "type": "integer",  
      "value": "integer"  
    },  
    "average_simulation_duration_seconds": {  
      "name": "average_simulation_duration_seconds",  
      "type": "number",  
      "value": "number",  
      "unit": "seconds"  
    },  
    "total_collision_events_registered": {  
      "name": "total_collision_events_registered",  
      "type": "integer",  
      "value": "integer"  
    },  
    "average_damage_percentage": {  
      "name": "average_damage_percentage",  
      "type": "number",  
      "value": "number"  
    }  
}
```

```
"value": "number",
"unit": "%",
"description": "Degradação média nos twins por simulação"
},
"parameter_variance": {
  "name": "parameter_variance",
  "type": "object",
  "gravity_range_applied": [
    "min_value",
    "max_value"
  ],
  "friction_range_applied": [
    "min_value",
    "max_value"
  ],
  "time_scale_variations_count": "integer"
},
"materials_resistance_ranking": {
  "name": "materials_resistance_ranking",
  "type": "array",
  "items": {
    "material": "string",
    "avg_damage_received": "number",
    "simulation_count": "integer",
    "resistance_score": "number"
  }
}
},
"qualitativos": {
  "individual_simulation_reports": {
    "name": "individual_simulation_reports",
    "type": "array",
    "items": {
      "simulation_id": "string",
      "timestamp": "ISO8601",
      "objects_involved": [
        {
          "object_id": "string",
          "primary_material": "string",
          "secondary_materials_percentage": "object",
          "initial_integrity": "number"
        }
      ],
      "collision_sequence": [
        {
          "event_id": "integer",
          "start_time": "ISO8601"
        }
      ]
    }
  }
}
```

```
"collision_timestamp": "number",
"objects_colliding": [
    "object_id_1",
    "object_id_2"
],
"damage_inflicted": {
    "object_id_1": "number",
    "object_id_2": "number"
}
},
],
"final_status": {
    "surviving_objects": [
        "object_id"
    ],
    "destroyed_objects": [
        "object_id"
    ],
    "total_damage_accumulated": "number"
},
"material_performance_analysis": "string"
},
},
"most_resistant_material_combination": {
    "name": "most_resistant_material_combination",
    "type": "object",
    "primary_material": "string",
    "secondary_materials": "object",
    "avg_damage_threshold": "number",
    "simulations_tested": "integer",
    "recommendation": "string"
},
"design_patterns_identified": {
    "name": "design_patterns_identified",
    "type": "array",
    "items": {
        "pattern_id": "string",
        "pattern_description": "string",
        "frequency": "integer",
        "example_objects": [
            "object_id"
        ]
    }
},
"data_extraction_for_research": {
    "name": "data_extraction_for_research",
```

```

    "type": "object",
    "dataset_filename": "string",
    "records_count": "integer",
    "variables_tracked": [
        "velocity",
        "acceleration",
        "collision_force",
        "material_degradation",
        "trajectory"
    ],
    "potential_research_applications": [
        "materials_engineering",
        "impact_dynamics",
        "design_optimization"
    ]
}
}
}

```

Teste: Deploy da Atividade (Padrão)

- **URL:** /deploy?activityID=test_std&gravity=9.8
- **Método:** GET
- **Status:** 200 OK
- **Duração:** 2ms
- **Resposta:**

`http://localhost:8080/user?activityID=test_std`

Teste: Deploy da Atividade (Com Colisões)

- **URL:** /deploy?activityID=test_col&record_collision_events=true
- **Método:** GET
- **Status:** 200 OK
- **Duração:** 1ms
- **Resposta:**

`http://localhost:8080/user?activityID=test_col`

Teste: Obter Analíticas (Atividade Padrão)

- **URL:** /analytics

- **Método:** POST

- **Payload:**

```
{  
  "activityID": "test_std"  
}
```

- **Status:** 200 OK

- **Duração:** 12ms

- **Resposta:**

```
[  
  {  
    "inveniraStdID": 1001,  
    "quantAnalytics": [  
      {  
        "name": "total_objects_created",  
        "value": 0  
      },  
      {  
        "name": "total_simulations_executed",  
        "value": 0  
      },  
      {  
        "name": "average_simulation_duration_seconds",  
        "value": 0  
      },  
      {  
        "name": "average_damage_percentage",  
        "value": 0  
      }  
    ],  
    "qualAnalytics": [  
      {  
        "individual_simulation_reports": []  
      },  
      {  
        "most_resistant_material_combination": {}  
      },  
      {  
        "design_patterns_identified": []  
      },  
      {  
        "data_extraction_for_research": {}  
      }  
    ]  
  },  
  {  
    "inveniraStdID": 1002,  
    "quantAnalytics": [  
      {  
        "name": "total_objects_created",  
        "value": 0  
      },  
      {  
        "name": "total_simulations_executed",  
        "value": 0  
      }  
    ]  
  }]
```

```

},
{
  "name": "average_simulation_duration_seconds",
  "value": 0
},
{
  "name": "average_damage_percentage",
  "value": 0
}
],
"qualAnalytics": [
{
  "individual_simulation_reports": []
},
{
  "most_resistant_material_combination": {}
},
{
  "design_patterns_identified": []
},
{
  "data_extraction_for_research": {}
}
]
}
]

```

Teste: Obter Analíticas (Atividade com Colisões)

- **URL:** /analytics
- **Método:** POST
- **Payload:**

```
{
  "activityID": "test_col"
}
```

- **Status:** 200 OK
- **Duração:** 2ms
- **Resposta:**

```
[  
 {  
   "inveniraStdID": 1001,  
   "quantAnalytics": [  
     {  
       "name": "total_objects_created",  
       "value": 0  
     },  
     {  
       "name": "total_simulations_executed",  
       "value": 0  
     },  
     {  
       "name": "average_simulation_duration_seconds",  
       "value": 0  
     },  
     {  
       "name": "average_damage_percentage",  
       "value": 0  
     },  
     {  
       "name": "total_collision_events_registered",  
       "value": 0  
     }  
   ],  
   "qualAnalytics": [  
     {  
       "individual_simulation_reports": []  
     },  
     {  
       "most_resistant_material_combination": {}  
     },  
     {  
       "design_patterns_identified": []  
     },  
     {  
       "data_extraction_for_research": {}  
     }  
   ]  
 },  
 {  
   "inveniraStdID": 1002,  
   "quantAnalytics": [  
     {  
       "name": "total_objects_created",  
       "value": 0  
     },  
     {  
       "name": "total_simulations_executed",  
       "value": 0  
     },  
     {  
       "name": "average_simulation_duration_seconds",  
       "value": 0  
     },  
     {  
       "name": "average_damage_percentage",  
       "value": 0  
     },  
     {  
       "name": "total_collision_events_registered",  
       "value": 0  
     }  
   ]  
 }]
```

```
},
{
  "name": "total_simulations_executed",
  "value": 0
},
{
  "name": "average_simulation_duration_seconds",
  "value": 0
},
{
  "name": "average_damage_percentage",
  "value": 0
},
{
  "name": "total_collision_events_registered",
  "value": 0
}
],
"qualAnalytics": [
  {
    "individual_simulation_reports": []
  },
  {
    "most_resistant_material_combination": {}
  },
  {
    "design_patterns_identified": []
  },
  {
    "data_extraction_for_research": {}
  }
]
}
```