

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>
    </select>
  </form>
  ... (truncated)
</div>
```



Teste: Obter Parâmetros JSON

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

```
{
  "activity_id": "objecttwins_v1",
  "environment_config": {
    "gravity": {
      "name": "gravity",
      "type": "number",
      "value": 9.8,
      "unit": "m/s²",
      "editable": true,
      "description": "Aceleração gravitacional do ambiente"
    },
    "friction_coefficient": {
      "name": "friction_coefficient",
      "type": "number",
      "value": 0.3,
      "editable": true,
      "range": [
        0,
        1
      ]
    },
    "time_scale": {
      "name": "time_scale",
      "type": "number",
      "value": 1,
      "editable": true,
      "presets": [
        "0.5",
        "1.0",
        "2.0",
        "4.0"
      ]
    },
    "max_simulation_time": {
      "name": "max_simulation_time",
      "type": "integer",
      "value": 300,
      "unit": "seconds"
    }
  },
  "object_creation": {
    "allowed_primitives": {
      "name": "allowed_primitives",
      "type": "array",
      "items": [
        "cube",
```

```

        "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": 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",
    "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",

```

```

        "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
    }
  ],
  "qualAnalytics": [
    {
      "individual_simulation_reports": []
    },
    {
      "most_resistant_material_combination": {}
    },
    {
      "design_patterns_identified": []
    },
    {
      "data_extraction_for_research": {}
    }
  ]
}
]

```