

Stack9 Entity examples

Activity type for livestock management system

```
{
  "head": {
    "key": "activity_type",
    "name": "Activity Type",
    "pluralisedName": "Activity Types",
    "isActive": true,
    "allowComments": true,
    "allowTasks": true
  },
  "fields": [
    {
      "key": "key",
      "label": "Key",
      "description": "Multiple activity types may use the same key. Used internally for event processing.",
      "type": "TextField",
      "validateRules": {
        "required": false
      },
      "behaviourOptions": {
        "displayAsDefaultFilter": true
      }
    },
    {
      "key": "name",
      "label": "Name",
      "description": "The Name of the Activity Type",
      "type": "TextField",
      "validateRules": {
        "required": true
      },
      "behaviourOptions": {
        "displayAsDefaultFilter": true
      }
    },
    {
      "key": "module",
      "label": "Module",
      "placeholder": "Select Module...",
      "type": "OptionSet",
      "typeOptions": {
        "values": ["Procurement", "Quarantine", "Voyage", "Traceability"]
      },
      "validateRules": {
        "required": false
      }
    }
  ]
}
```

```
    },
    "behaviourOptions": {
      "readOnly": false,
      "displayAsDefaultFilter": true
    }
  },
  {
    "key": "category",
    "label": "Category",
    "placeholder": "Select Category...",
    "type": "OptionSet",
    "typeOptions": {
      "values": ["CSV", "Mobile App", "API", "Migration"]
    },
    "validateRules": {
      "required": false
    },
    "behaviourOptions": {
      "readOnly": false,
      "displayAsDefaultFilter": true
    }
  },
  {
    "key": "description",
    "label": "Description",
    "type": "TextField",
    "validateRules": {
      "required": true
    }
  },
  {
    "key": "sort_order",
    "label": "Order",
    "description": "Allows you to specify the order in which Activity Types
are displayed",
    "type": "TextField",
    "validateRules": {
      "required": false
    }
  },
  {
    "key": "is_active",
    "label": "Active",
    "description": "Sets the active status of the activity type",
    "type": "Checkbox",
    "validateRules": {
      "required": false
    }
  }
}
```

```

    },
    {
      "key": "event_definition",
      "label": "Event Definition",
      "type": "MonacoEditorField",
      "description": "Event definition is required for mobile app events",
      "typeOptions": {
        "language": "json"
      },
      "validateRules": {
        "required": false
      }
    }
  ],
  "printableDocuments": [],
  "hooks": [
    {
      "type": "function",
      "hookType": "ValidateAndTransformInput",
      "functionName": "custom/activity-type/validateAndTransform"
    }
  ],
  "notifications": [],
  "formLayout": {
    "fieldsets": [
      {
        "key": "main",
        "label": "Main",
        "isCollapsed": false,
        "rows": [
          {
            "columns": [
              {
                "fieldKey": "name"
              },
              {
                "fieldKey": "key"
              }
            ]
          }
        ],
      },
      {
        "columns": [
          {
            "fieldKey": "module"
          },
          {
            "fieldKey": "category"
          }
        ]
      }
    ]
  }
}

```

```

    ]
  },
  {
    "columns": [
      {
        "fieldKey": "description"
      }
    ]
  },
  {
    "columns": [
      {
        "fieldKey": "sort_order"
      },
      {
        "fieldKey": "is_active"
      }
    ]
  },
  {
    "columns": [
      {
        "fieldKey": "event_definition"
      }
    ]
  }
]
}
]
},
"viewsDefinition": {
  "defaultViewTitle": "All Activity Types",
  "views": [
    {
      "key": "procurement_activity_types",
      "label": "Procurement Activity Types",
      "viewType": "listView",
      "isDefault": false,
      "query": {
        "where": {
          "module": "Procurement"
        }
      }
    },
    {
      "viewOptions": {
        "userGroups": [],
        "defaultSort": {
          "sort_order": "asc"
        }
      }
    }
  ]
}

```

```

"gridSettings": {
  "agGrid": {
    "columnDefs": [
      {
        "headerName": "Name",
        "field": "name",
        "sortable": true
      },
      {
        "headerName": "Key",
        "field": "key",
        "sortable": true
      },
      {
        "headerName": "Module",
        "field": "module",
        "sortable": true
      },
      {
        "headerName": "Category",
        "field": "category",
        "sortable": true
      },
      {
        "headerName": "Description",
        "field": "description",
        "sortable": true
      },
      {
        "headerName": "Order",
        "field": "sort_order",
        "sortable": true
      },
      {
        "headerName": "Active",
        "field": "is_active",
        "sortable": true
      }
    ]
  }
},
{
  "key": "quarantine_activity_types",
  "label": "Quarantine Activity Types",
  "viewType": "listView",
  "isDefault": false,

```

```
"query": {
  "where": {
    "module": "Quarantine"
  }
},
"viewOptions": {
  "userGroups": [],
  "defaultSort": {
    "sort_order": "asc"
  },
  "gridSettings": {
    "agGrid": {
      "columnDefs": [
        {
          "headerName": "Name",
          "field": "name",
          "sortable": true
        },
        {
          "headerName": "Key",
          "field": "key",
          "sortable": true
        },
        {
          "headerName": "Module",
          "field": "module",
          "sortable": true
        },
        {
          "headerName": "Category",
          "field": "category",
          "sortable": true
        },
        {
          "headerName": "Description",
          "field": "description",
          "sortable": true
        },
        {
          "headerName": "Order",
          "field": "sort_order",
          "sortable": true
        },
        {
          "headerName": "Active",
          "field": "is_active",
          "sortable": true
        }
      ]
    }
  }
}
```

```

    ]
  }
}
},
{
  "key": "voyage_activity_types",
  "label": "Voyage Activity Types",
  "viewType": "listView",
  "isDefault": false,
  "query": {
    "where": {
      "module": "Voyage"
    }
  },
  "viewOptions": {
    "userGroups": [],
    "defaultSort": {
      "sort_order": "asc"
    },
    "gridSettings": {
      "agGrid": {
        "columnDefs": [
          {
            "headerName": "Name",
            "field": "name",
            "sortable": true
          },
          {
            "headerName": "Key",
            "field": "key",
            "sortable": true
          },
          {
            "headerName": "Module",
            "field": "module",
            "sortable": true
          },
          {
            "headerName": "Category",
            "field": "category",
            "sortable": true
          },
          {
            "headerName": "Description",
            "field": "description",
            "sortable": true
          }
        ]
      }
    }
  }
}

```

```

        {
            "headerName": "Order",
            "field": "sort_order",
            "sortable": true
        },
        {
            "headerName": "Active",
            "field": "is_active",
            "sortable": true
        }
    ]
}
}
},
{
    "key": "traceability_activity_types",
    "label": "Traceability Activity Types",
    "viewType": "listView",
    "isDefault": false,
    "query": {
        "where": {
            "module": "Traceability"
        }
    },
    "viewOptions": {
        "userGroups": [],

        "defaultSort": {
            "sort_order": "asc"
        },
        "gridSettings": {
            "agGrid": {
                "columnDefs": [
                    {
                        "headerName": "Name",
                        "field": "name",
                        "sortable": true
                    },
                    {
                        "headerName": "Key",
                        "field": "key",
                        "sortable": true
                    },
                    {
                        "headerName": "Module",
                        "field": "module",
                        "sortable": true
                    }
                ]
            }
        }
    }
}

```



```

    },
    {
      "headerName": "Category",
      "field": "category",
      "sortable": true
    },
    {
      "headerName": "Description",
      "field": "description",
      "sortable": true
    },
    {
      "headerName": "Order",
      "field": "sort_order",
      "sortable": true
    },
    {
      "headerName": "Active",
      "field": "is_active",
      "sortable": true
    }
  ]
}
}
}
}
}
],
},
"gridSettings": {
  "agGrid": {
    "columnDefs": [
      {
        "headerName": "Name",
        "field": "name",
        "sortable": true
      },
      {
        "headerName": "Key",
        "field": "key",
        "sortable": true
      },
      {
        "headerName": "Module",
        "field": "module",
        "sortable": true
      },
      {
        "headerName": "Category",

```

```

        "field": "category",
        "sortable": true
    },
    {
        "headerName": "Description",
        "field": "description",
        "sortable": true
    },
    {
        "headerName": "Order",
        "field": "sort_order",
        "sortable": true
    },
    {
        "headerName": "Active",
        "field": "is_active",
        "sortable": true
    }
]
}
}
}

```

Application Version entity

```

{
  "head": {
    "key": "app_version",
    "name": "App Version",
    "pluralisedName": "App Versions",
    "isActive": true,
    "allowComments": true,
    "allowTasks": false
  },
  "fields": [
    {
      "key": "current_version",
      "label": "Current Version",
      "type": "TextField",
      "validateRules": {
        "required": true
      }
    },
    {
      "key": "minimum_version",
      "label": "Minimum Version",

```

```

        "type": "TextField",
        "validateRules": {
            "required": true
        }
    },
    {
        "key": "url",
        "label": "URL",
        "type": "TextField",
        "validateRules": {
            "required": false
        }
    },
    {
        "key": "is_active",
        "label": "Active",
        "type": "Checkbox",
        "validateRules": {
            "required": false
        }
    }
],
"printableDocuments": [],
"hooks": [],
"notifications": [],
"formLayout": {
    "fieldsets": [
        {
            "key": "main",
            "label": "Main",
            "isCollapsed": false,
            "rows": [
                {
                    "columns": [
                        {
                            "fieldKey": "current_version"
                        },
                        {
                            "fieldKey": "minimum_version"
                        }
                    ]
                },
                {
                    "columns": [
                        {
                            "fieldKey": "is_active"
                        }
                    ]
                }
            ]
        }
    ]
}

```

```
    },
    {
      "columns": [
        {
          "fieldKey": "url"
        }
      ]
    }
  ]
}
]
},
"gridSettings": {
  "agGrid": {
    "columnDefs": [
      {
        "headerName": "Current Version",
        "field": "current_version",
        "sortable": true
      },
      {
        "headerName": "Minimum Version",
        "field": "minimum_version",
        "sortable": true
      },
      {
        "headerName": "Active",
        "field": "is_active",
        "sortable": true
      },
      {
        "headerName": "URL",
        "field": "url",
        "sortable": true
      }
    ]
  }
}
}
```

Question Entity

```
{
  "head": {
    "key": "question",
    "name": "Question",
    "pluralisedName": "Questions",
    "isActive": true,
    "allowComments": false,
    "allowTasks": false
  },
  "fields": [
    {
      "key": "name",
      "label": "Name",
      "type": "TextField",
      "validateRules": {
        "required": true
      }
    },
    {
      "key": "description",
      "label": "Description",
      "type": "TextField",
      "validateRules": {
        "required": false
      }
    },
    {
      "key": "question_type_id",
      "label": "Type",
      "placeholder": "Select Type",
      "type": "SingleDropDown",
      "typeOptions": {
        "label": "name"
      },
      "validateRules": {
        "required": true
      },
      "relationshipOptions": {
        "ref": "question_type",
        "many": false
      }
    },
    {
      "key": "question_options",
      "label": "Options",
      "type": "MultiDropDown",
      "typeOptions": {
```

```

        "value": "id",
        "label": "name"
    },
    "validateRules": {
        "required": false
    },
    "relationshipOptions": {
        "ref": "question_option",
        "many": true
    }
},
{
    "key": "submissions",
    "label": "Submissions",
    "type": "Grid",
    "typeOptions": {
        "relationshipField": "questionnaire_id",
        "gridSettings": {
            "agGrid": {
                "columnDefs": [
                    {
                        "headerName": "Question",
                        "field": "questionnaire__name",
                        "sortable": true
                    }
                ]
            }
        }
    },
    "validateRules": {
        "required": false
    },
    "relationshipOptions": {
        "ref": "questionnaire_submission",
        "many": false
    }
}
],
"printableDocuments": [],
"hooks": [],
"notifications": [],
"formLayout": {
    "fieldsets": [
        {
            "key": "main",
            "isCollapsed": false,
            "rows": [

```

```

        "columns": [
            {
                "fieldKey": "name"
            }
        ]
    },
    {
        "columns": [
            {
                "fieldKey": "description"
            }
        ]
    },
    {
        "columns": [
            {
                "fieldKey": "question_type_id"
            }
        ]
    },
    {
        "columns": [
            {
                "fieldKey": "question_options"
            }
        ]
    }
]
}
]
},
"gridSettings": {
    "agGrid": {
        "columnDefs": [
            {
                "headerName": "Name",
                "field": "name",
                "sortable": true
            },
            {
                "headerName": "Description",
                "field": "description",
                "sortable": false
            },
            {
                "headerName": "Type",
                "field": "question_type_id",
                "sortable": false
            }
        ]
    }
}

```

```
}  
}  
}  
]  
}
```


User definition entity

```
{
  "head": {
    "key": "user_division",
    "name": "User Division",
    "pluralisedName": "User Divisions",
    "isActive": true,
    "allowComments": true,
    "allowTasks": false
  },
  "fields": [
    {
      "key": "user_id",
      "label": "User",
      "type": "SingleDropDown",
      "typeOptions": {
        "label": "full_name"
      },
      "validateRules": {
        "required": true
      },
      "relationshipOptions": {
        "ref": "user",
        "many": false
      }
    },
    {
      "key": "division_id",
      "label": "Division",
      "type": "SingleDropDown",
      "typeOptions": {
        "label": "name"
      },
      "validateRules": {
        "required": true
      },
      "relationshipOptions": {
        "ref": "division",
        "many": false
      }
    }
  ],
  "printableDocuments": [],
  "hooks": [],
  "notifications": [],
  "formLayout": {
    "fieldsets": [
      {
```

```

        "key": "main",
        "label": "Main",
        "isCollapsed": false,
        "rows": [
            {
                "columns": [
                    {
                        "fieldKey": "user_id"
                    }
                ]
            },
            {
                "columns": [
                    {
                        "fieldKey": "division_id"
                    }
                ]
            }
        ]
    },
    "viewsDefinition": {
        "defaultViewTitle": "All User Divisions"
    },
    "gridSettings": {
        "agGrid": {
            "columnDefs": [
                {
                    "headerName": "Name",
                    "field": "user.full_name",
                    "sortable": true
                },
                {
                    "headerName": "Division",
                    "field": "division.name",
                    "sortable": true
                }
            ]
        }
    }
}

```

User Information entity

```
{
  "head": {
    "key": "user",
    "allowTasks": true
  },
  "fields": [
    {
      "key": "is_mobile_user",
      "label": "Mobile App Access",
      "description": "A Google Firebase account will be created so the user can access the mobile app. If removed, existing account will be disable and access to the app will be revoked.",
      "type": "Checkbox",
      "validateRules": {
        "required": false
      }
    },
    {
      "key": "countries",
      "label": "Countries",
      "placeholder": "Select Countries...",
      "type": "MultiDropDown",
      "typeOptions": {
        "label": "name",
        "value": "id"
      },
      "validateRules": {
        "required": false
      },
      "relationshipOptions": {
        "ref": "country",
        "many": true
      }
    },
    {
      "key": "divisions",
      "label": "Divisions",
      "placeholder": "Select Divisions...",
      "type": "MultiDropDown",
      "typeOptions": {
        "label": "name",
        "value": "id"
      },
      "validateRules": {
        "required": false
      },
      "relationshipOptions": {
```

```

        "ref": "division",
        "many": true
    }
},
{
    "key": "company_id",
    "label": "Company",
    "placeholder": "Select Company...",
    "type": "SingleDropDown",
    "typeOptions": {
        "label": "trading_name"
    },
    "validateRules": {
        "required": false
    },
    "relationshipOptions": {
        "ref": "organisation",
        "many": false
    }
}
],
"hooks": [
    {
        "type": "function",
        "hookType": "AfterChange",
        "functionName": "native/user/afterChange"
    },
    {
        "type": "function",
        "hookType": "ValidateAndTransformInput",
        "functionName": "native/user/validateAndTransform"
    }
],
"formLayout": {
    "fieldsetsets": [
        {
            "key": "mobileApp",
            "label": "Mobile App Access",
            "isCollapsed": false,
            "rows": [
                {
                    "columns": [
                        {
                            "fieldKey": "is_mobile_user"
                        }
                    ]
                }
            ],
        },
    ]
}

```

```

        "columns": [
            {
                "fieldKey": "countries"
            }
        ]
    }
],
},
{
    "key": "membership",
    "label": "Membership",
    "isCollapsed": true,
    "rows": [
        {
            "columns": [
                {
                    "fieldKey": "company_id"
                }
            ]
        },
        {
            "columns": [
                {
                    "fieldKey": "divisions"
                }
            ]
        },
        {
            "columns": [
                {
                    "fieldKey": "user_groups"
                }
            ]
        }
    ]
}
],
},
"viewsDefinition": {
    "views": [
        {
            "key": "buyers",
            "label": "Buyers",
            "viewType": "listView",
            "isDefault": false,
            "query": {
                "select": ["security_role.name"],
                "where": {

```

```

        "security_role.name": {
            "$in": ["Procurement Users", "Procurement/Operations Staff"]
        },
        "is_mobile_user": true
    }
},
"viewOptions": {
    "userGroups": [],
    "gridSettings": {
        "agGrid": {
            "columnDefs": [
                {
                    "headerName": "Full Name",
                    "field": "full_name",
                    "sortable": true
                },
                {
                    "headerName": "First Name",
                    "field": "first_name",
                    "sortable": true
                },
                {
                    "headerName": "Last Name",
                    "field": "last_name",
                    "sortable": true
                },
                {
                    "headerName": "Email",
                    "field": "email",
                    "sortable": true
                },
                {
                    "headerName": "Blocked",
                    "field": "is_blocked",
                    "sortable": true
                }
            ]
        }
    }
},
{
    "key": "awos",
    "label": "AWOs",
    "viewType": "listView",
    "isDefault": false,
    "query": {
        "select": ["security_role.name"],

```

```

    "where": {
      "security_role.name": {
        "$in": ["Traceability Users"]
      },
      "is_mobile_user": true
    }
  },
  "viewOptions": {
    "userGroups": [],
    "gridSettings": {
      "agGrid": {
        "columnDefs": [
          {
            "headerName": "Full Name",
            "field": "full_name",
            "sortable": true
          },
          {
            "headerName": "First Name",
            "field": "first_name",
            "sortable": true
          },
          {
            "headerName": "Last Name",
            "field": "last_name",
            "sortable": true
          },
          {
            "headerName": "Email",
            "field": "email",
            "sortable": true
          },
          {
            "headerName": "Blocked",
            "field": "is_blocked",
            "sortable": true
          }
        ]
      }
    }
  },
  "gridSettings": {
    "agGrid": {
      "columnDefs": [
        {

```

```
    "headerName": "Full Name",
    "field": "full_name",
    "sortable": true
  },
  {
    "headerName": "First Name",
    "field": "first_name",
    "sortable": true
  },
  {
    "headerName": "Last Name",
    "field": "last_name",
    "sortable": true
  },
  {
    "headerName": "Email",
    "field": "email",
    "sortable": true
  },
  {
    "headerName": "Security Role",
    "field": "security_role.name",
    "sortable": true
  },
  {
    "headerName": "Mobile User",
    "field": "is_mobile_user",
    "sortable": true
  },
  {
    "headerName": "Blocked",
    "field": "is_blocked",
    "sortable": true
  }
]
}
}
```


Example of Entity Hook Function

```
const {
  schema,
} = require("../.../services/schema-validator/activityType.schema");
const { activityTypeKeys } = require("../.../services/constants");

module.exports = {
  /**
   * @param db {Object} (IDb interface from queries\index.ts)
   * @param entity {Object} (Persisted object)
   * @param user {Object} (JWT token decoded from SSO)
   * @param hookType {Object} (validateAndTransform | afterChange)
   * @param operation {Object} (create | update | delete | proceedToStep |
returnStep | rejectRecord)
   * @param services {Object} (check models\Services interface)
   */
  exec: async ({ db, entity, user, hookType, operation }) => {
    const shouldTriggerFunction =
      (operation == "create" || operation == "update") &&
      hookType == "ValidateAndTransformInput";

    let event_definition = null;

    if (shouldTriggerFunction) {
      if (entity.key && activityTypeKeys.indexOf(entity.key) === -1) {
        return {
          entity,
          valid: false,
          errorMessage: `Key is invalid. Available options are
${activityTypeKeys.join(
            ", "
          )}`
        };
      }
      if (entity.event_definition) {
        try {
          const eventDefinition = JSON.parse(entity.event_definition);

          const result = schema.validate(eventDefinition);

          if (result.error)
            return {
              entity,
              valid: false,
              errorMessage: `Event definition is not valid: ${result.error}`,
            };

          event_definition = JSON.stringify(eventDefinition);
        }
      }
    }
  }
}
```

```

        } catch (e) {
            return {
                entity,
                valid: false,
                errorMessage: `Event definition is not a valid JSON document`,
            };
        }
    }
}

return {
    entity: { ...entity, event_definition },
    valid: true,
    errorMessage: undefined,
};
},
timeout: 5000,
};

```

Example of Cron Job Function

```

import {
    CronJobContext,
    CronJobFunction,
    CronJobResponse,
    withCronJob,
} from '@april9/stack9-sdk';

import { SyncMechanism } from '../services/datasources/datasources';

const skippedResponse = {
    success: true,
    skipped: true,
    message: 'Skipped, already running.',
};

class SendDataToFirebase extends CronJobFunction {
    private syncMechanism: SyncMechanism;

    constructor(context: CronJobContext) {
        super();

        this.syncMechanism = new SyncMechanism(context);
    }

    async exec(): Promise<CronJobResponse> {
        const messages = [];
    }
}

```

```
const result = await this.syncMechanism.exec();

messages.push(...result.messages);

if (!messages.length) {
  return skippedResponse;
}

return { success: true, message: messages.join('\n') };
}
}

export default withCronJob(SendDataToFirebase, 5000);
```