UG10266_ZH

MCUXpresso 系统管理器配置工具快速入门指南

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Document information

Information	Content
Keywords	UG10266，系统管理器，适用于 i.MX 的配置工具
Abstract	本快速入门指南提供逐步概述，帮助您高效地安装、配置并开始使用系统管理器 (SM) 配置工具

1 概述

本快速入门指南提供了分步概述，帮助您高效地安装、配置和开始使用系统管理器（SM）配置工具。无论您是 i.MX 应用处理器配置工具的新手，还是希望将系统管理器（SM）配置工具集成到您的生产流程中，本指南都将帮助您快速入门。

系统管理器（SM）是运行在许多 NXP i.MX 处理器上的 Cortex-M 处理器上的应用程序。Cortex-M 是引导核心，运行引导 ROM，该 ROM 加载 SM（和其他引导代码），然后跳转到 SM。然后 SM 配置硬件的某些方面，如隔离机制，然后启动系统中的其他核心。启动这些核心后，它进入服务模式，通过基于 ARM 系统控制和管理接口（SCMI）的客户端 RPC API 提供对时钟、电源、传感器和引脚控制的访问。为了促进核心之间的隔离，SM 将 SoC 划分为逻辑机器（LM），这些逻辑机器对硬件和 RPC API 调用都有可静态配置的访问权限。

2 硬件要求

启动系统管理器配置工具的详细要求列在 *User Guide for Config Tools for i.MX (Desktop)* (文档 IMXUG) 中。

3 软件要求

系统管理器配置工具是 i.MX 应用处理器配置工具的一部分，可以在 Windows、Linux 或 MacOS 上执行。详细要求列在 *Config Tools for i.MX Release Notes* (文档 MCUXCTIMXRN) 中。

4 安装和配置系统管理器配置工具

系统管理器配置工具是 i.MX 配置工具的一部分。该软件提供在线版本（使用网络浏览器）和安装在主机上的桌面应用程序。对于桌面安装可执行文件，可在 https://nxp.com 获取安装程序。对于 Windows 和 MacOS，安装程序作为向导逐步指导您完成安装过程。Linux 提供 Debian 软件包。有关安装的详细信息可以在 *Installation Guide for Config Tools for i.MX* (文档 IMXIUG) 中找到。

要在 NXP 开发板上开始使用系统管理器配置工具，请下载 GitHub repository 并为目标配置编译 SM。

5 使用工具

1. 打开系统管理器（SM）配置工具。
2. 通过按下 **Project Settings** 按钮打开项目配置向导。 a. 设置配置名称。b. 设置 SM 项目位置路径（例如，从 GitHub repository 下载）。
   - 要创建新的空配置，选择 SM FW 支持的开发板并点击 **Create a new configuration** 按钮（此选项适用于新开发板或不受支持开发板的开发者）。
   - 要导入现有的开发板配置，在 CFG 和 JSON 文件之间选择并点击相应的按钮，然后设置要导入文件的路径。

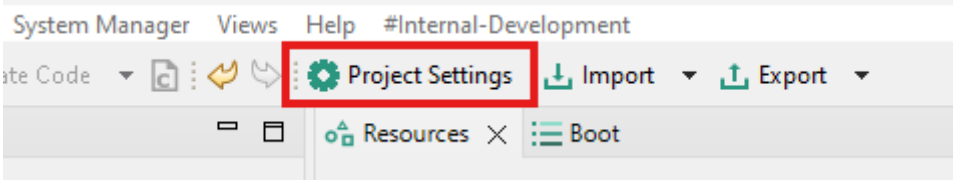

Figure 1. 项目设置按钮

注意： 配置导入期间发生的问题将显示在可导出的报告对话框中。如果有问题，请查看报告并相应调整配置。

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5.1 系统和详情视图

要浏览常规系统配置，请使用显示设置树节点的 **System View**。这些是可以配置的主要类别。

- *Project Configuration* - SM 项目配置名称和描述，编译器 Mak 文件配置
- *Board Configuration* - 开发板特定设置，SM 调试选项，全局分配模板定义，创建自定义用户宏资源
- *Logical Machines* - LM 特定设置（例如 RPC），从 LM 角度的模式选择配置，启动-停止序列配置，分配模板定义
  - *Agents* - SCMI 代理特定设置（例如邮箱），分配模板定义
    - *RPC Channels* - 通道设置（例如传输）
- *Domains* - DOM 特定设置，分配模板定义
- *mSel Configurations Overview* - 从 mSel 角度的模式选择配置概述

要配置通用系统管理器项目设置，例如项目 Mak 文件或调试功能，请使用 **System View** 的树来选择所需的节点。树节点的每次选择都会在配置 **Details View** 中显示可用的配置设置。使用 **System View** 标题上的 **Expand/Collapse** 按钮，您可以展开/折叠活动选择的所有子节点。

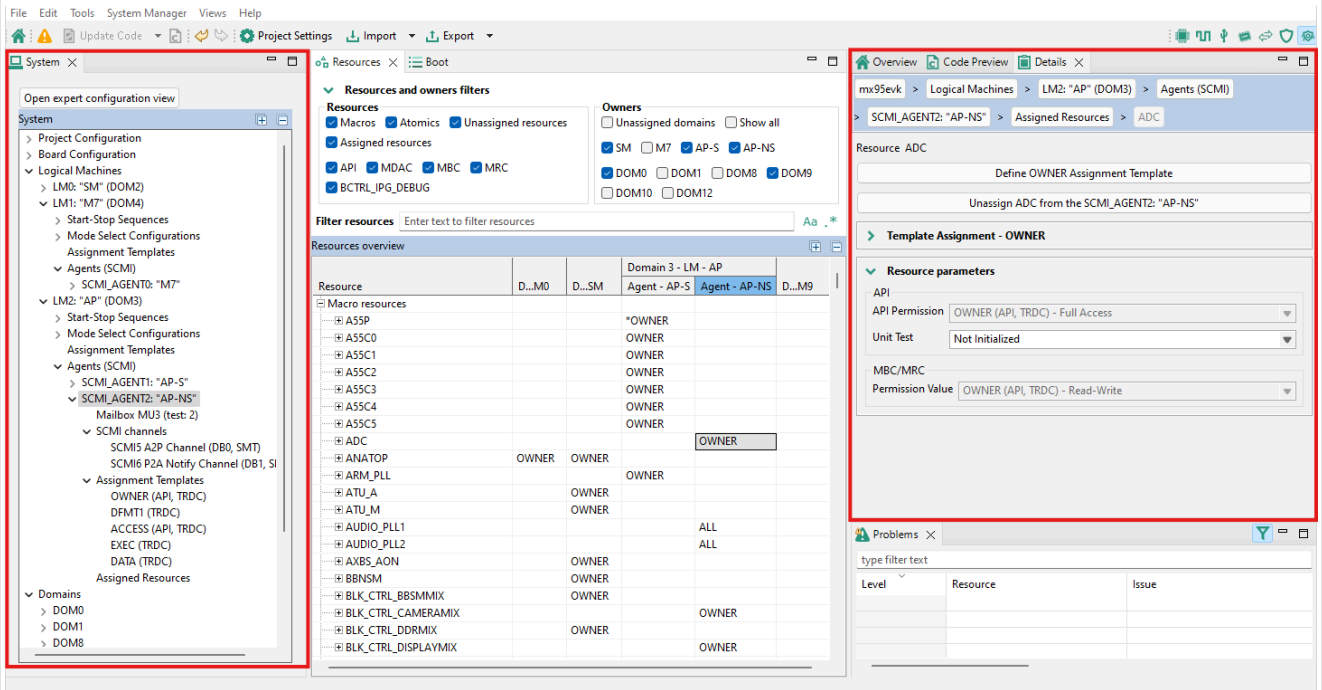

Figure 2. 使用详情视图（右）在系统视图（左）中配置选定元素

5.2 资源视图

要将资源分配给资源所有者（LM、SCMI_AGENT、DOM），请使用 **Resources View**。注意：每个资源所有者都与特定的 RDC 域（DOM）相关。

1. 分配和配置 **Resource parameters** - 在 **Resources View** 中选择对应 **Resource**（行）和 **Resource Owner**（列）的单元格。然后在配置 **Details view** 中点击 **Assign** 按钮。
2. 使用预配置的 **Assignment Templates** 分配资源。为此，使用 **System** 和 **Details Views** 为您所需的资源所有者配置 **Assignment Templates**，并设置将配置的名称（标识符）和资源参数（与分配资源不相关的参数将被忽略）。

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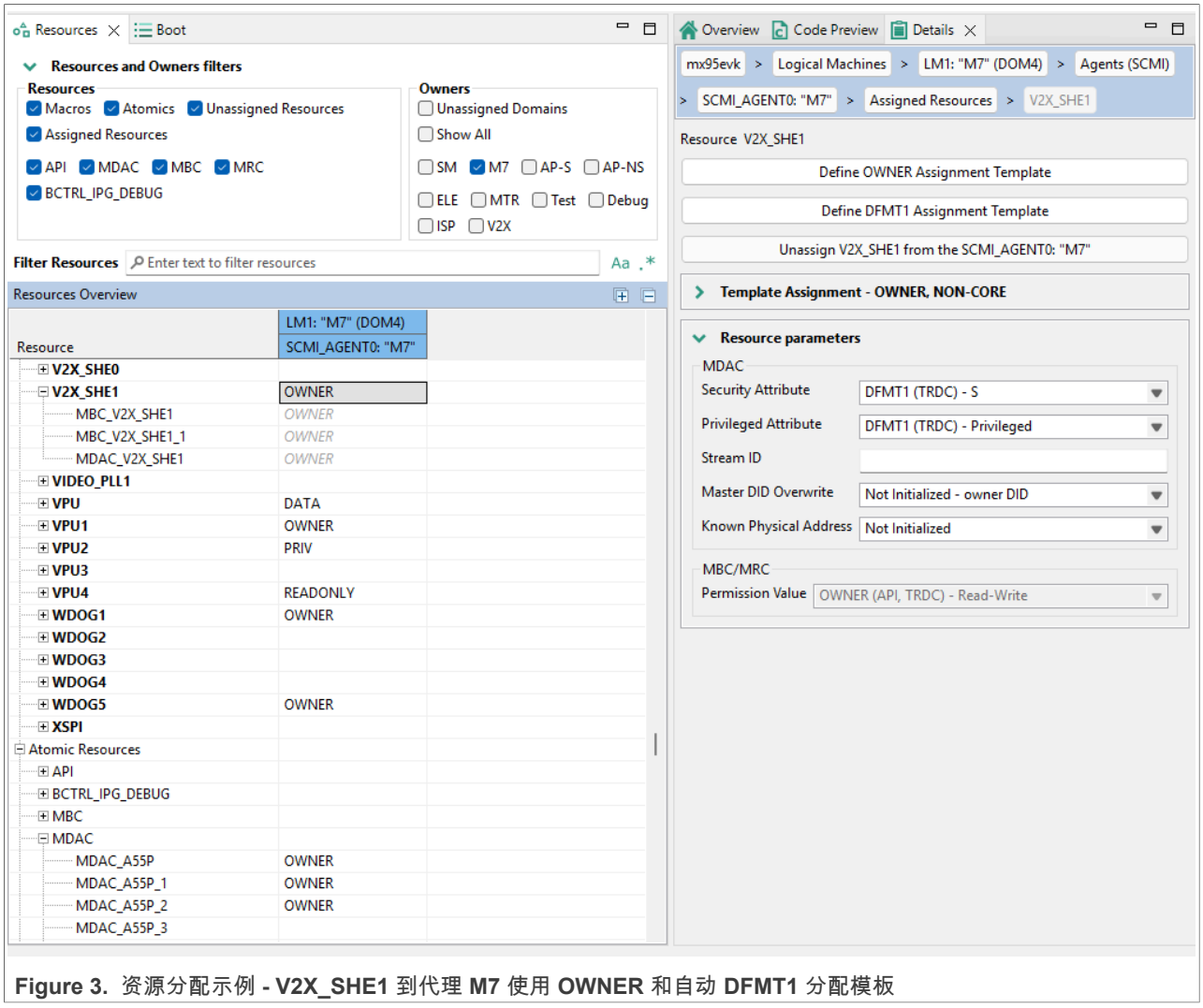

Figure 3. 资源分配示例 - **V2X_SHE1** 到代理 **M7** 使用 **OWNER** 和自动 **DFMT1** 分配模板

3. 创建新的内存扇区（memory sector）- 在 **Resources View** 中，选择带有 后缀的对应 **Resource**（行）以及 **Resource Owner**（列）。双击所需的单元格，选择 **Create a new memory sector**，然后在 **Details View** 中配置内存扇区参数（起始地址 *Start Address*、大小 *Size* 或结束地址 *End Address*，以及权限 *Permissions*）。
4. 将已有的内存扇区分配给 **Resource owner** - 展开带有 ; 后缀的 **Resource**（行），选择内存扇区，并双击该单元格以选择模板或分配内存扇区 。

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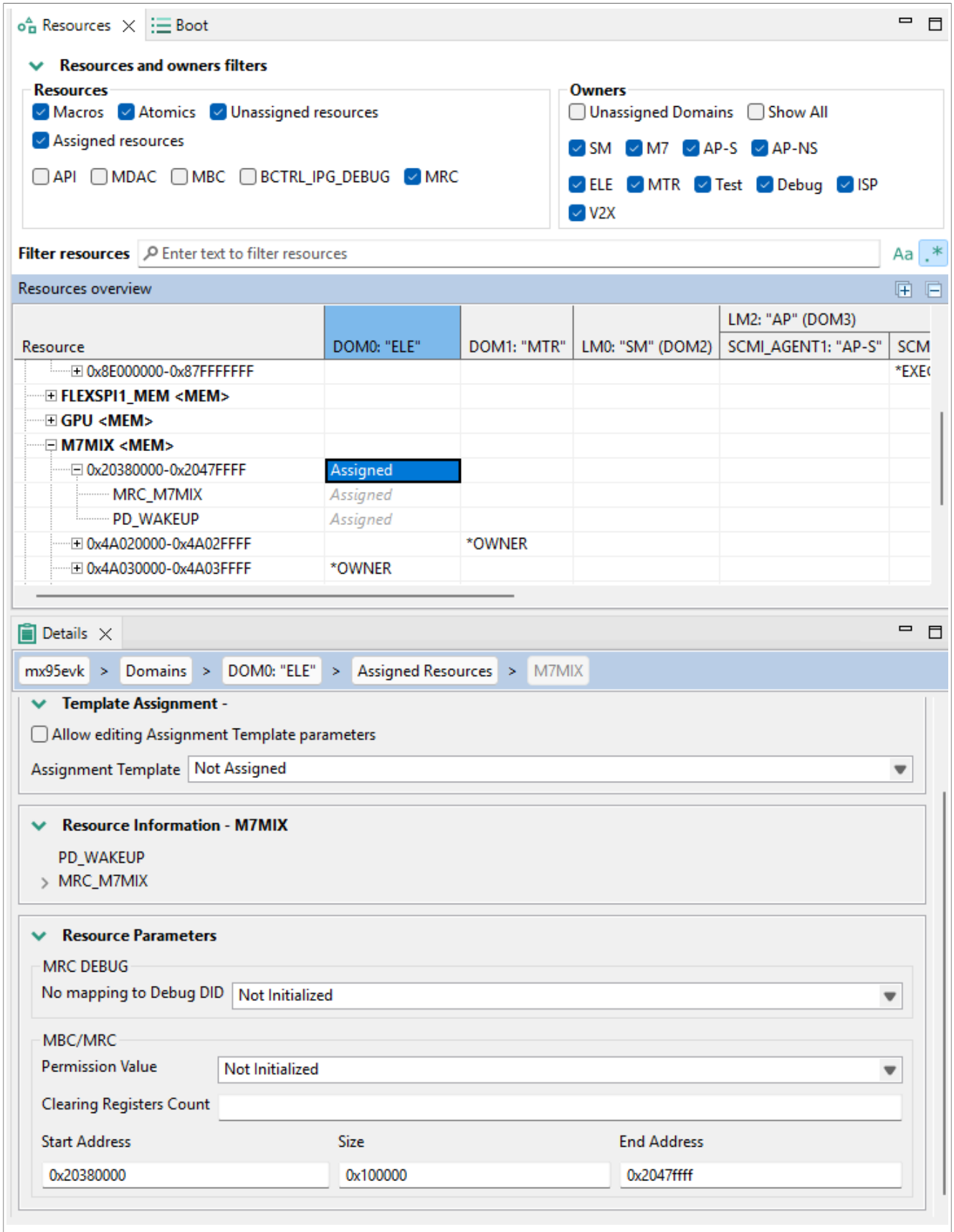

Figure 4. 内存资源分配示例——将 **M7MIX0x20380000-0x2047ffff**分配给 **ELE** 域

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- 要修改资源分配的参数，选择资源并使用 **Details View**：
  - 使用模板分配部分选择并查看由分配模板分配的配置参数。可以通过选择复选框启用编辑来直接修改分配模板参数。注意：更新选定的分配模板会影响分配给此模板的所有资源。
  - 要为选定的分配模板配置附加参数，选择分配模板选择下方的设置。不可用的参数与资源无关。灰显的参数由分配模板配置，无法覆盖。要更改灰显设置值，您必须创建新的、选择其他的或更新选定的分配模板。
- 要删除资源分配，在 **Resources View** 中选择对应 **Resource**（行）和 **Resource Owner**（列）的单元格。然后在配置 **Details view** 中点击 **Unassign** 按钮。
- 要查找所需资源或调整概览表，使用 **Filter** 或 **Search bar**。为此，将*Resources*和*Owners*过滤器的选择与搜索栏过滤相结合。搜索栏区分大小写并支持正则表达式搜索，可以通过点击搜索栏右侧的按钮启用。 注意: 要查看资源分配中包含的所有原子资源，请在资源视图中展开宏资源。

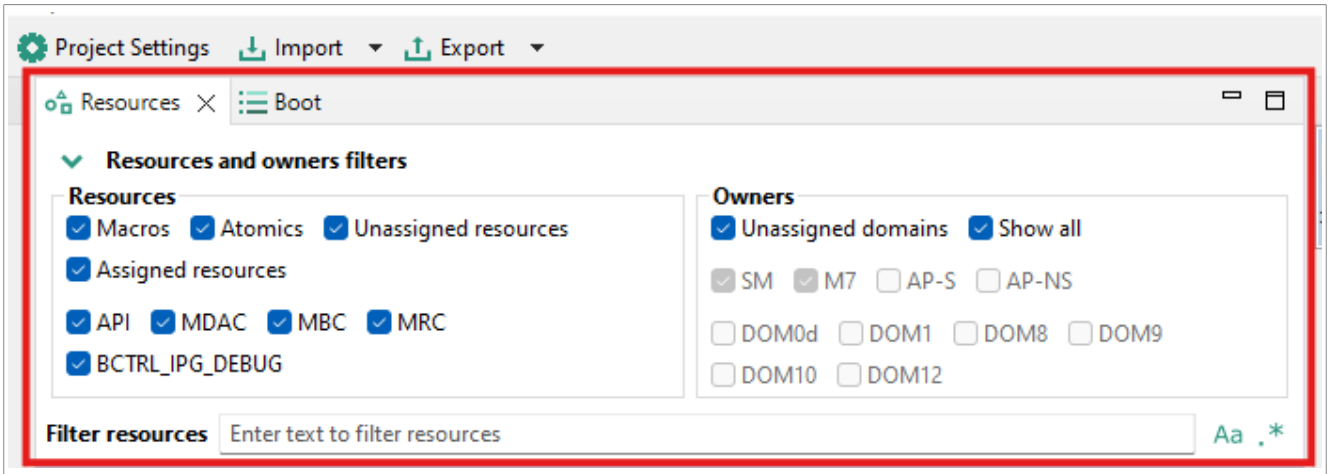

Figure 5. 过滤器和搜索栏

5.3 启动视图

要配置与逻辑机器启动相关的设置，使用 **Boot view**。

- 要添加或删除 mSel 配置，在 **Boot View** 中点击 mSel 设置标题中的 **Add/Remove** 按钮。
- mSel 部分列出所有可用的 LM
  - 启动顺序可以通过左侧的 **Arrow buttons** 更改。当启用 **Boot** 参数时，逻辑机器的索引对应实际启动顺序（索引 0 表示 LM 不会启动）。
  - **Skip** 标志的配置在启动容器中没有映像可用的情况下抑制错误调用。
  - LM 的*Start*和*Stop Sequence*在下拉菜单中选择。要添加、删除或修改启动-停止序列，从所需的 mSel 部分选择要影响的 LM，并使用 **Details View**
    - 使用 **plus/minus** 按钮添加或删除启动-停止序列
    - 双击 启动-停止序列打开其配置详情进行修改
      - 修改启动-停止序列的索引（标识符）和用户名
      - 使用 **plus/minus** 按钮添加或删除要在序列中调用的资源命令
      - 双击 资源命令打开其配置详情进行修改（选择资源命令、可选参数和单元测试标志）

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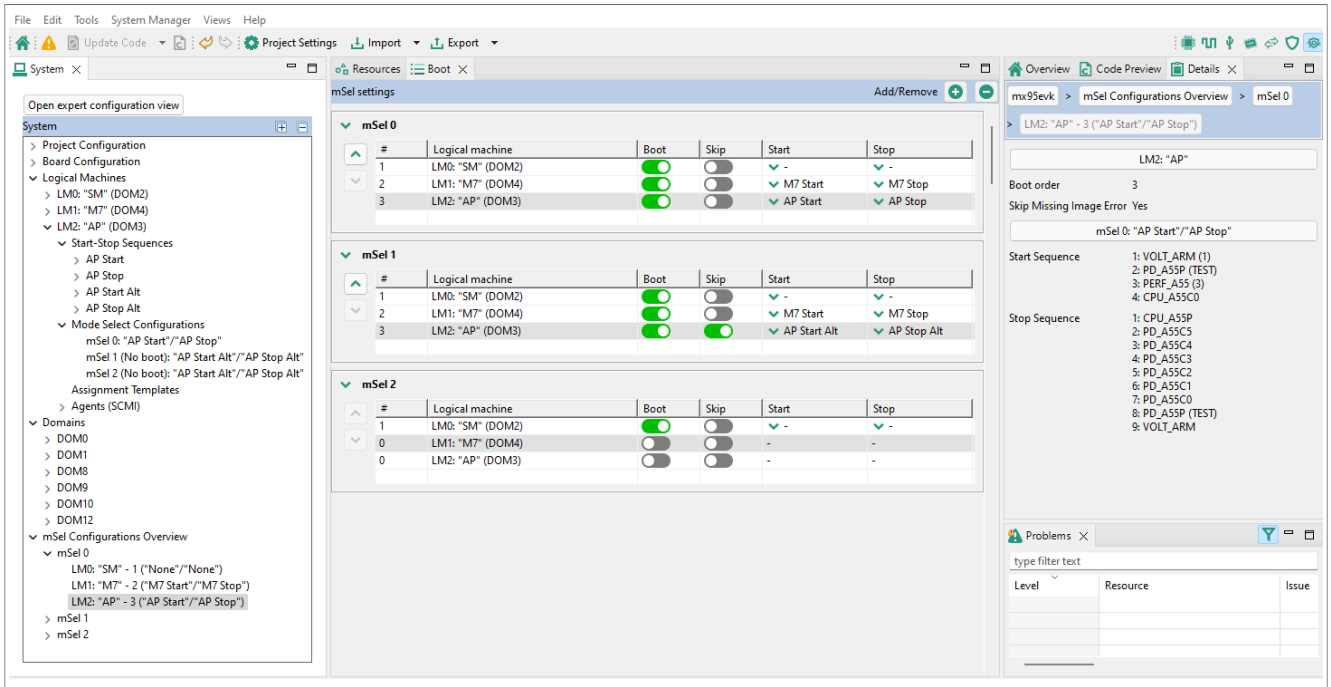

Figure 6. 启动视图

6 参考资料

1. *User Guide for Config Tools for i.MX (Desktop)* (文档 IMXUG)
2. *Installation Guide for Config Tools for i.MX* (文档 IMXIUG)
3. *Config Tools for i.MX Release Notes* (文档 MCUXCTIMXRN)
4. *NXP System Manager Reference Manual* (文档 SMRM)

7 修订历史

Table 1. 修订历史

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