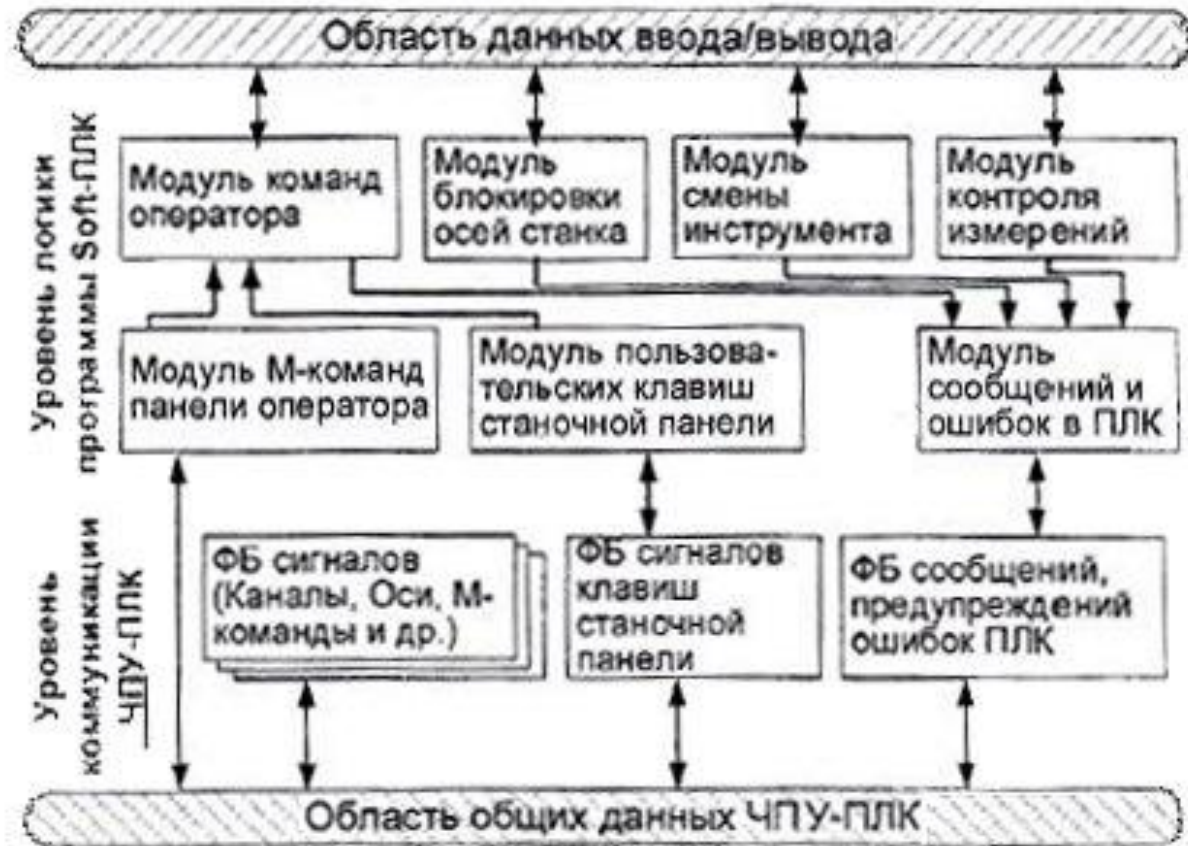


Тема диплома: Исследование и разработка инструментария диагностики коммуникационного канала в программно-реализованном контроллере

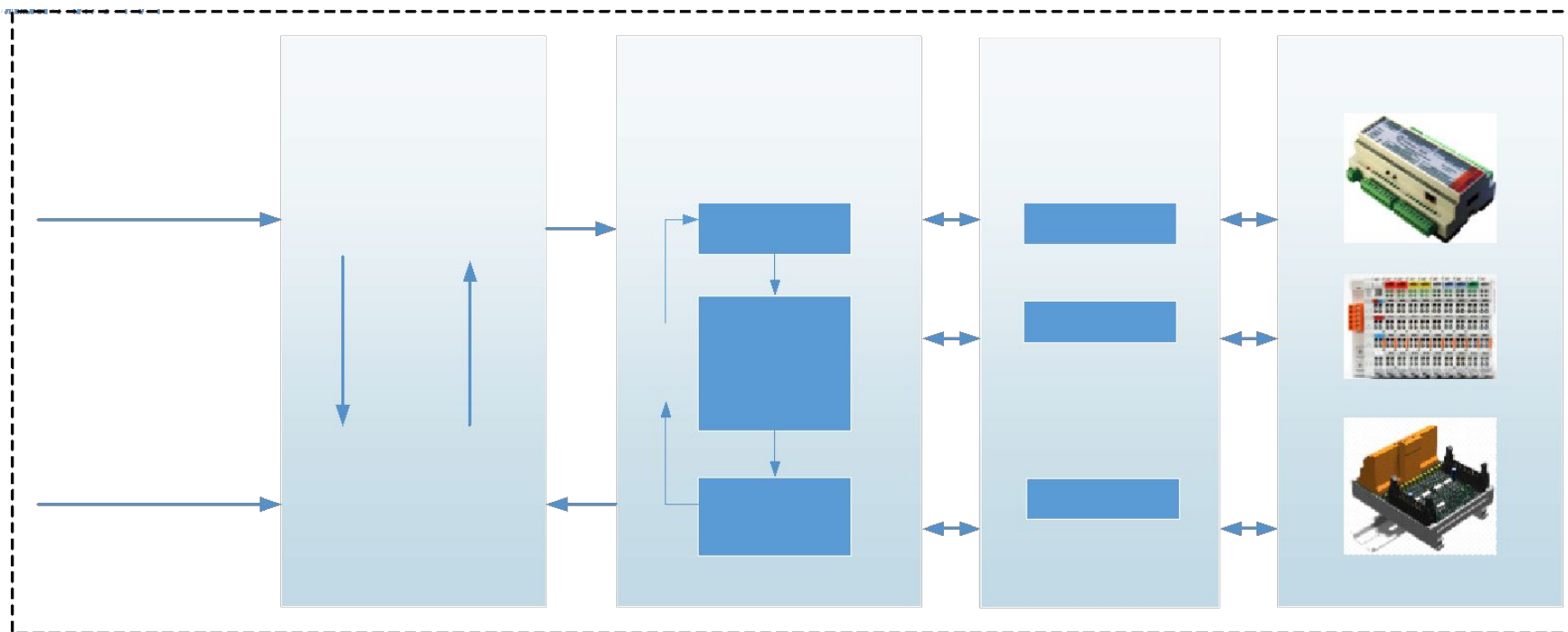
Задачи: 1. Анализ управления устройствами электроавтоматики для систем ЧПУ

2. Проектирование общей архитектуры программы
3. Реализация программы в среде SoftPLC
4. Тестирование компонентов программы

Принцип взаимодействия задач ЧПУ и SoftPLC



Архитектура SoftPLC



Передача данных между SoftPLC и ЧПУ

[illegible]

The screenshot shows the 'Общая память ПЛК' (General PLC Memory) configuration window. At the top, it lists memory addresses: All size 819200 (0xC8000), SPLC 0 (0x0), INT 102400 (0x19000), IO 204800 (0x32000), Inp 204800 (0x32000), Out 256000 (0x3E800), CMD 307200 (0x4B000), VAR 409600 (0x64000), DRV 512000 (0x7D000), OSC 614400 (0x96000), RES 716800 (0xAF000).

Below the address list are fields for 'Cmd code' (set to 0 nop), 'Par. 1' (0), 'Par. 2' (0), and 'Par. 3' (0). A status bar indicates 'in: cmd 0 (nop), par. 1 = 0, par. 2 = 0, par. 3 = 0, out: OP-, Ready, state 0 (init), last cmd 0 (nop)'.

A detailed view of the command parameters is shown:

Размер	1 байт
Тип	UInt
Адр [10]	512000
Адр [16] 0x	7D000
Знач. [10]	0
Знач. [16] 0x	0
Строка	
Обновлять	False

Buttons for 'Write' and 'Read' are available. Below this is a hex dump showing memory contents starting from 0000 0000.

On the right side, there's a vertical stack of buttons for selecting different memory areas: Splt 0x0, Int 0x19000, Inp 0x32000, Out 0x3E800, Cmd 0x4B000, Var 0x64000, Drv 0x7D000, Osc 0x96000, and Res 0xAF000. The 'Drv 0x7D000' button is currently selected.

At the bottom left, a small table lists objects:

ID	Тип объекта	Имя объекта
0	IN	Enable
1	StateMach	
2	IN	
3	CONNECT	-
4	CONNECT	-
5	OUT	
6	CONNECT	-
7	IN	State0Active
8	OUT	State0End
9	OUT	State1End
10	IN	State1Active

The screenshot displays the FBEditor software interface for editing a PLC program. The top menu bar includes options: Файл, Правка, Вид, Модель, Сервис, and Помощь. Below the menu is a toolbar with various icons for file operations and execution. The main workspace is divided into two panes. The left pane, titled 'Входы/выходы' (Inputs/Outputs), lists the following variables: IN, OUT, IN_SYNC, OUT_SYNC, and a section for logical operations (Логические) including AND, OR, NOT, XOR, SHL, SHR, PACK, and UNPACK. Below this are sections for arithmetic operations (Арифметические), triggers (Триггеры), functions (Функции), movement (Движение), and pointer operations (Пользовательские). The right pane shows the ladder logic program. It features a 'NewDocument' tab and a project tree with the following structure: NC_PLC_Test_Default v12, NC_PLC_Test_Default v12 - ICommand - 0, and TestStatesProg. The main editing area contains several rungs of a ladder logic program. The first rung is an 'Enable' network with two parallel normally open contacts labeled '0' and '3', leading to a coil labeled '0'. The second rung is a 'StateMach' block with inputs 'Enabl' and 'SiCou', and outputs 'Res' and 'bEnab'. The third rung is a 'StateDActive' block with a coil labeled '1' and a contact labeled '0'. The fourth rung is a 'State0End' block with a coil labeled '1' and a contact labeled '1'. The fifth rung is a 'State1Active' block with a coil labeled '0' and a contact labeled '0'. The sixth rung is a 'State1End' block with a coil labeled '1' and a contact labeled '1'. The seventh rung is a 'State1Active' block with a coil labeled '0' and a contact labeled '13'. The eighth rung is a 'State1End' block with a coil labeled '1' and a contact labeled '14'. The ninth rung is a 'State1End' block with a coil labeled '1' and a contact labeled '12'.