

Local Area Monitoring System for Microgrid

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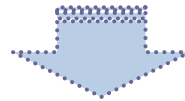
Background



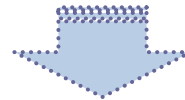
Korea-Illinois Smart Grid MOU
(July, 2010)



International R&D Collaboration



Project MOU



Local Area Monitoring System for Microgrid
(December, 2010)

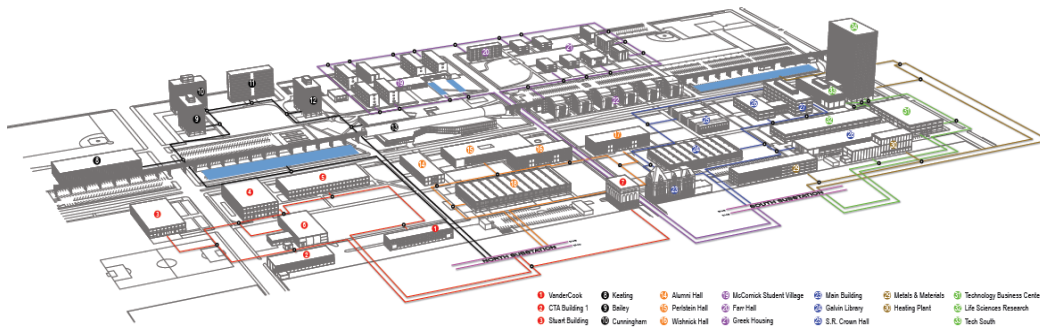
Project Overview

Title	Local Area Monitoring System for Microgrid
Organization	KERI/PROCOM Systems/IIT
Duration	Dec. 1, 2010 – Nov. 30, 2013 (3 years)
Budget	\$2,200,000

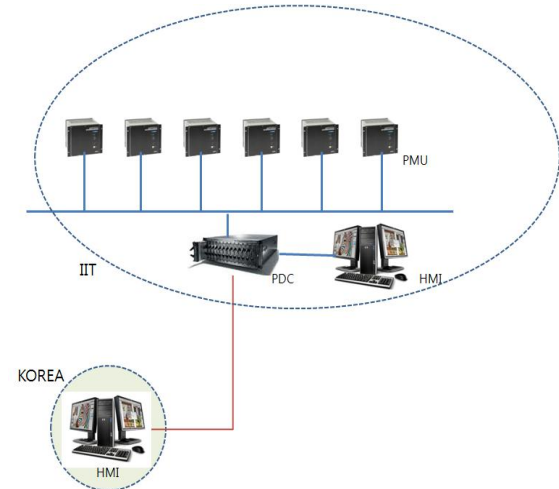
Project Overview

IIT Campus Microgrid

High Reliability Distribution System (drawing not to scale)
at the Illinois Institute of Technology - Main Campus

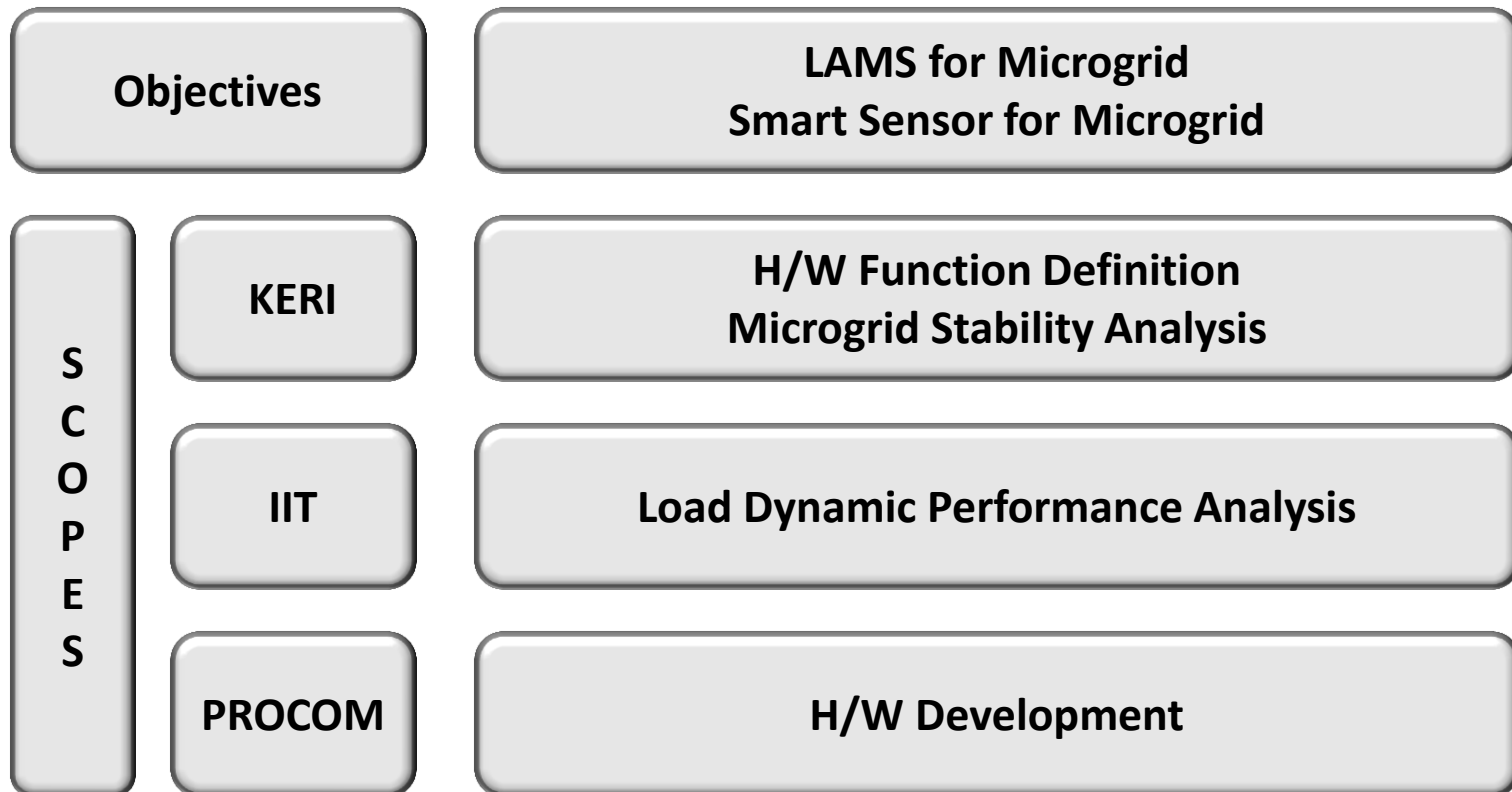


PMU



- Microgrid + PMU
- Microgrid Stability Analysis
- LAMS/Smart Sensor for Microgrid

Objectives & Scopes



Research Contents

Year	Objective	Research Contents
1 st (2011)	Installation	PMU/PDC/DB Installation S/W for Data Monitoring DB for Data Logging
2 nd (2012)	Development	Analysis S/W & HMI Smart Sensor System Modeling & Dynamic Analysis
3 rd (2013)	Demonstration	LAMS Demonstration Mobile LAMS Demonstration Smart Sensor Demonstration

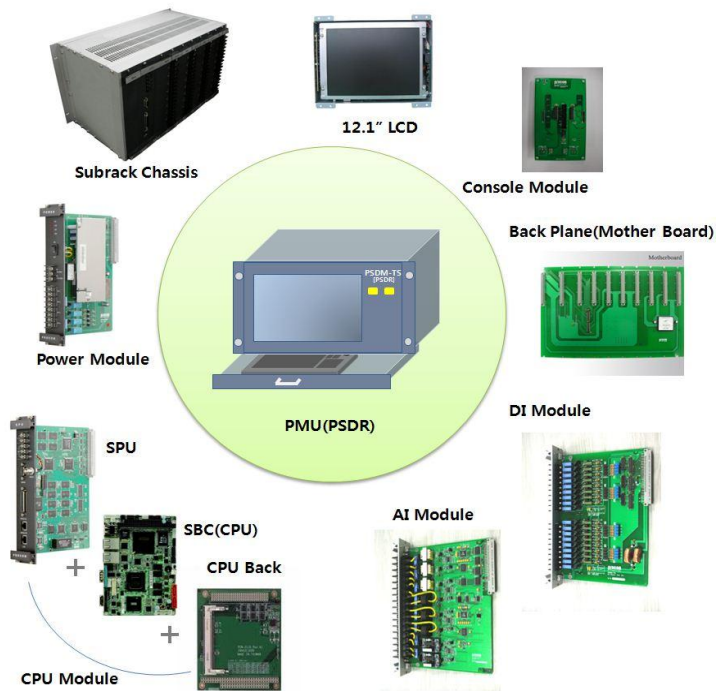
1st Year Achievements

❖ PMU Locations and Channel List

	IIT BUILDINGS	PMU		ANALOG			DIGITAL	MODULES					Remark	
		Device	Type	PT	CT	SPARE		PT8	CT8	PTx/CTx	AI	DI		
1	ENGINEERING 1	1	24/16	12	12	0	16	1	1	1	PT4/CT4	3	1	set 1
2	LIFE SCIENCE	1	24/16	9	9	6	16	1	1	1	PT1/CT7	3	1	set 1
3	STUART	1	32/16	13	13	6	16	1	2	1	PT5/CT3	4	1	set 1
4	GUNSAULUS	1	8/16	3	3	2	16	0	0	1	PT3/CT5	1	1	set 2
5	MTCC & COMMONS	1	24/16	9	9	6	16	1	1	1	PT1/CT7	3	1	set 1
6	HERMANN	1	24/16	9	9	6	16	1	1	1	PT1/CT7	3	1	set 1
7	WISHNICK & PERLSTEIN & ALUMNI	1	32/16	9	18	5	16	1	2	1	PT1/CT7	4	1	set 1
8	SIEGEL	1	16/16	6	6	4	16	0	1	1	PT6/CT2	2	1	set 1
9	NORTH SUBSTATION	1	40/16	6	27	7	16	0	4	1	PT6/CT2	5	1	set 1
10	IIT TOWER	1	24/16	9	9	6	16	1	1	1	PT1/CT7	3	1	set 2
11	LIFE SCIENCE RESEARCH & INCUBATOR	1	24/16	12	12	0	16	1	1	1	PT4/CT4	3	1	set 2
12	CO-GEN POWER PLANT	1	16/16	9	6	1	16	1	0	1	PT1/CT7	2	1	set 2
	Total	12		106	133	49	192	9	15	12		36	12	

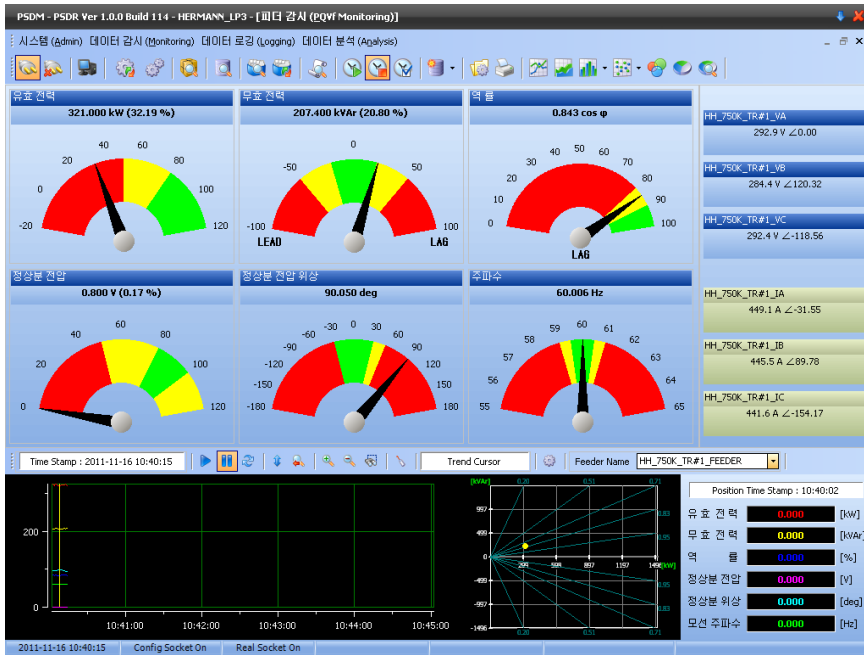
1st Year Achievements

❖ PMU Development & Installation

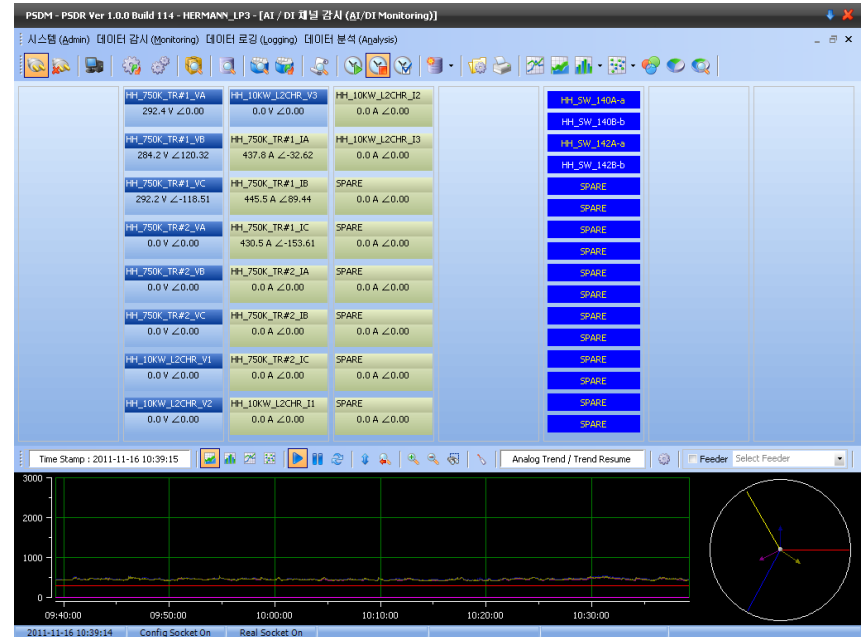


1st Year Achievements

❖ Implementation

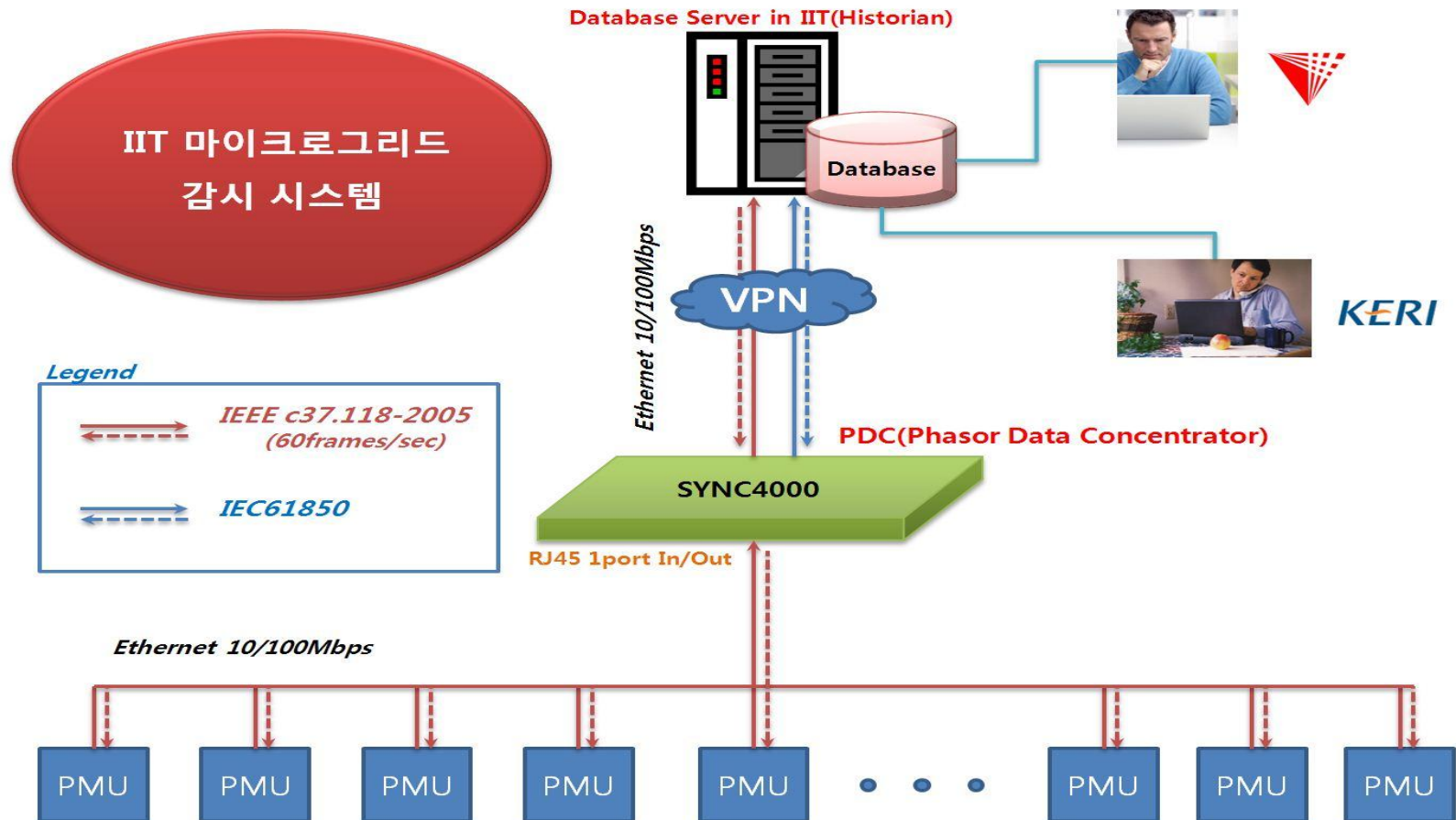


Siegel Hall Pre-Run Test Results



1st Year Achievements

❖ LAMS Structure & Interfaces

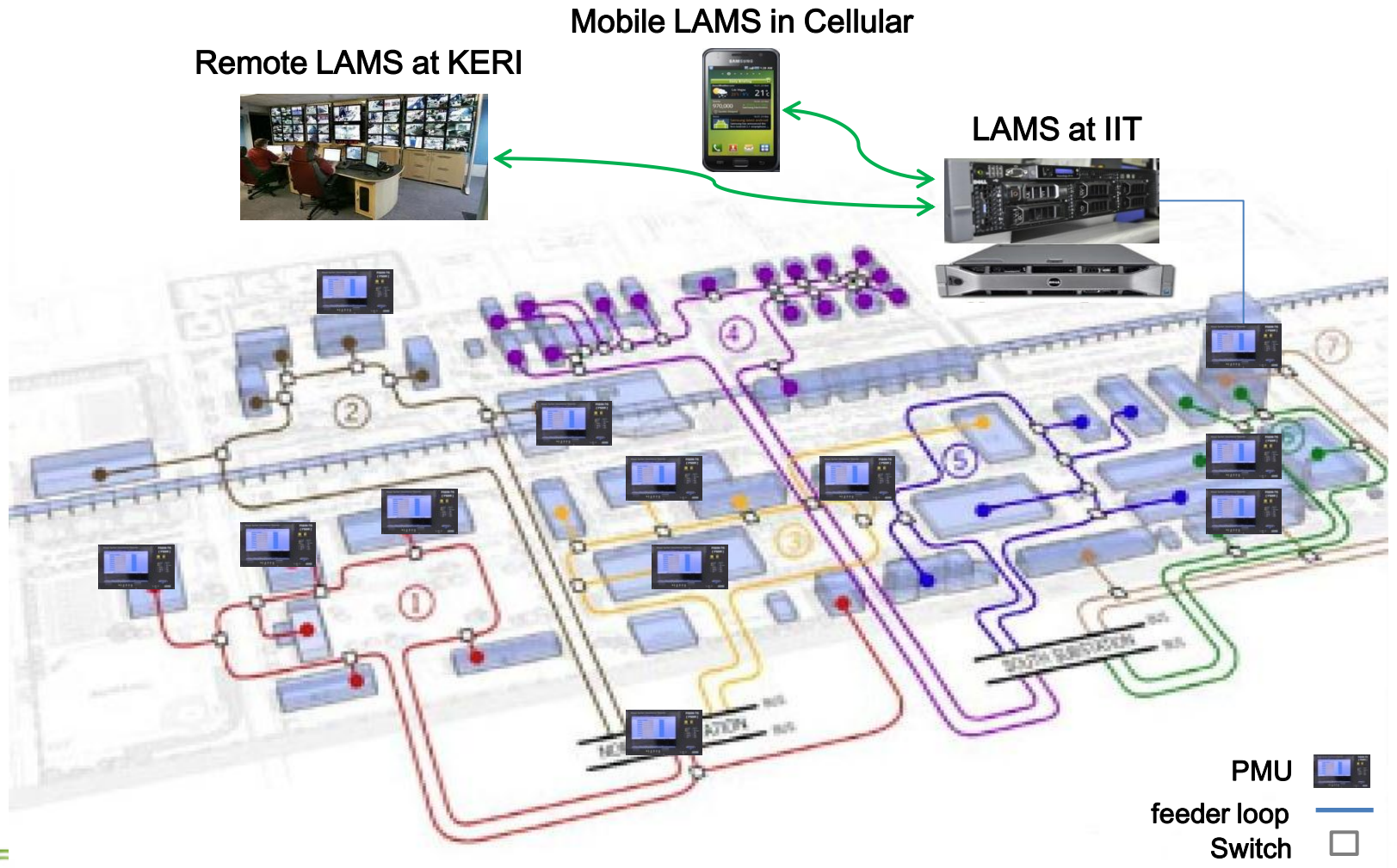


2nd Year Plan

- LAMS Development
 - Smart Sensor Development
 - Mobile LAMS Development
 - Remote LAMS Development

- Dynamic Performance Analysis
 - System Modeling
 - Shutdown/Start Up Test
 - Dynamic Characteristics Analysis

Future Schematic Diagram



Further Collaboration

- Mobile Microgrid
 - Military Base
 - Natural Disaster

- Plug & Play DG Aggregation
 - 14GW DGs for Emergency Power in Korea
 - Much more DGs for Emergency Power in USA

Thank you!