

# **ELEKTRIČNA MERENJA 2**

Predavači:

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# OSNOVNE INFORMACIJE

- Fond časova 2+0+2
- Nastava
  - Predavanja na tabli
  - Laboratorijske vežbe (8 vežbi)
- Izveštaji (praktikum ili na računaru)
- Ispit - radi se pismeni deo (zadaci)
- Ocena
  - 30 poena na osnovu izveštaja
  - 80 poena na pismenom delu
- Organizovanje predroka

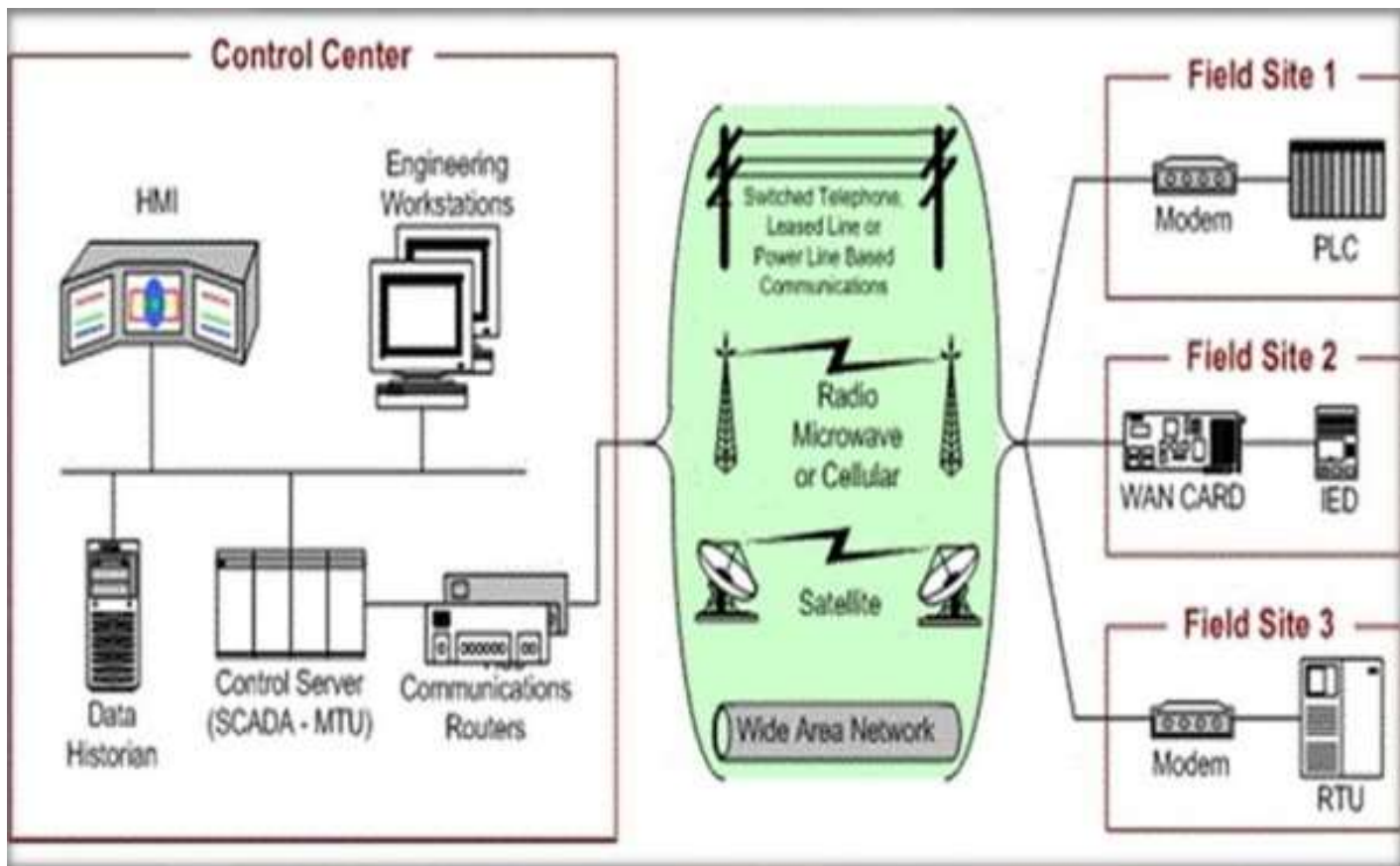
# PLAN I PROGRAM

- Merni mostovi naizmenične struje.
- Merenja u vremenskom domenu.
- Magnetna merenja, magnetno polje, indukcija i fluks.
- Merenje karakteristika magnetnih materijala.
- Merni transformatori.
- Merenje napona, struje, snage i energije u trofaznim sistemima naizmenične struje visokog napona.
- SCADA sistemi
- Pametna brojila
- Obrada signala

# SCADA SISTEMI

- SCADA - Supervisory control and data acquisition
- Dve osnovne funkcije
  - Merenje (naponi, snage, struje, statusi prekidačke opreme)
  - Upravljanje sistemom (elektrane, TS, on/off)
- Ostale funkcije
  - Obrada merenih podataka
  - Skladištenje rezultata radi analize
  - Veliki broj drugih funkcija (VAR kontrol, optimizacija,...)

# SCADA SYSTEMI



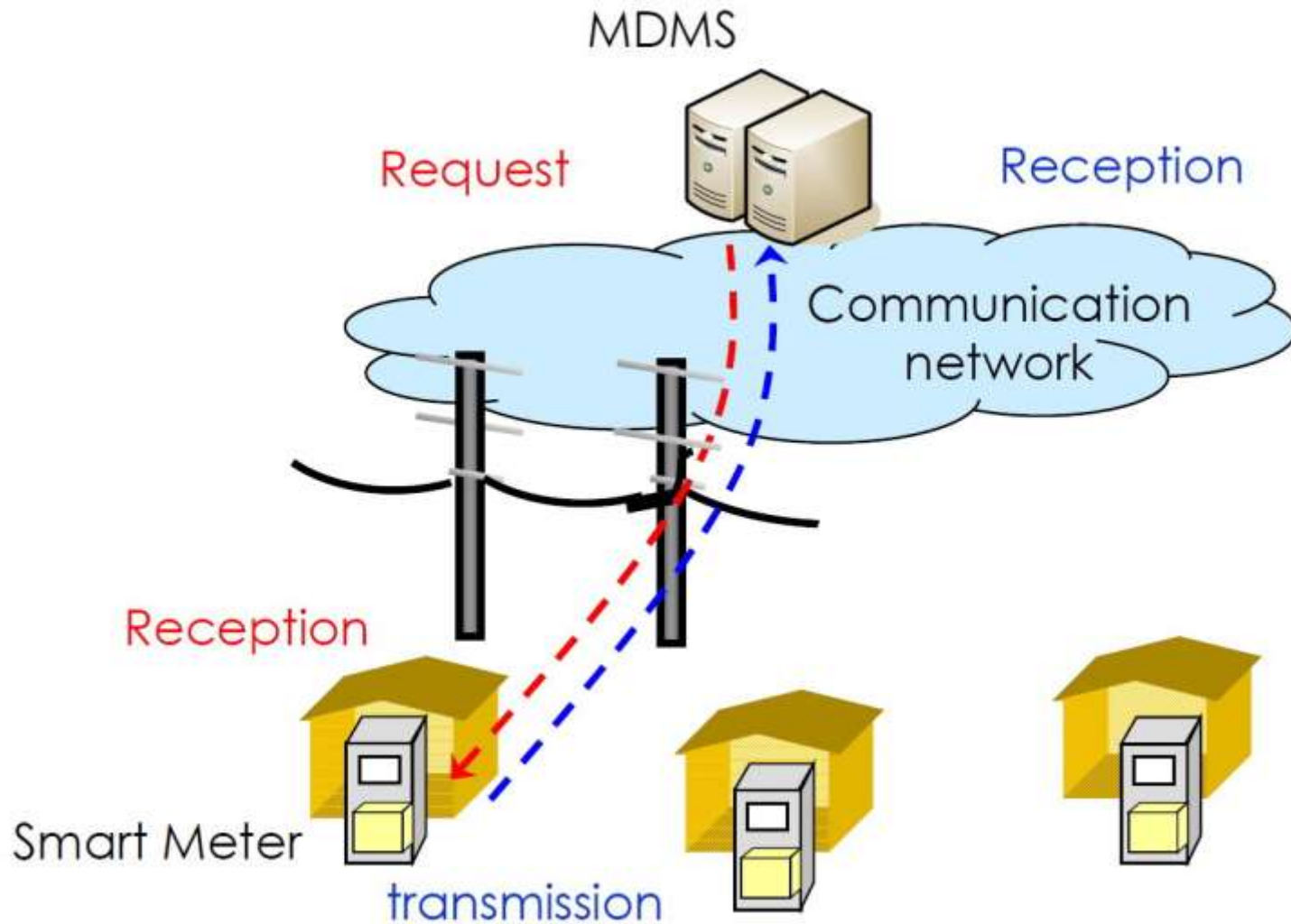
# SCADA SISTEMI



# PAMETNA BROJILA

- “Smart grid”
- Daljinsko očitavanje
- Upravljanje potrošnjom
- Izbor tarifa
- Manja potrošnja

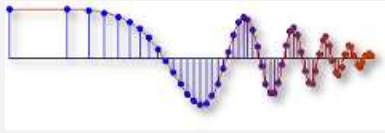
# PAMETNA BROJILA



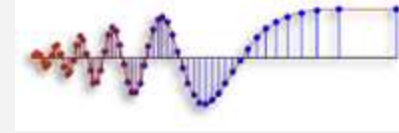


# PAMETNA BROJILA

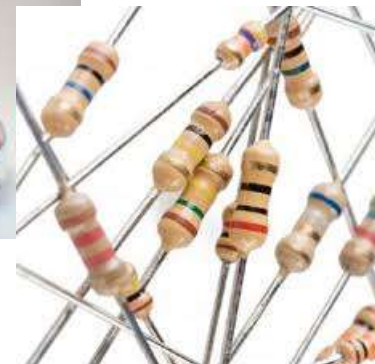
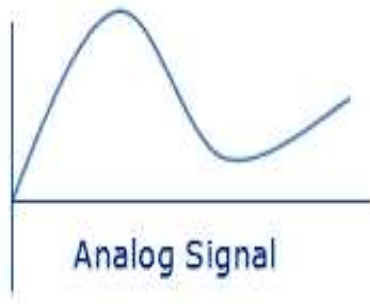


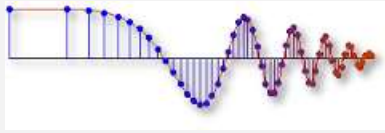


# OBRADA SIGNALA

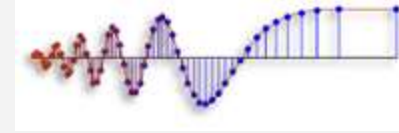


- Prilagođavanje analognih signala

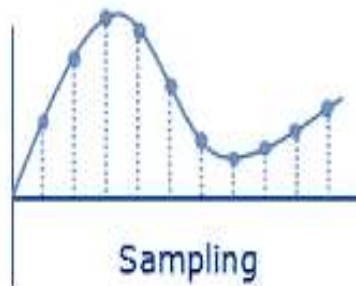


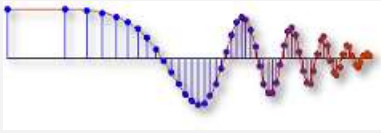


# OBRADA SIGNALA

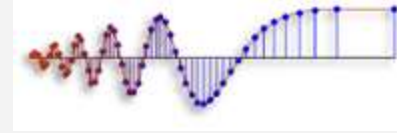


- Prilagođavanje analognih signala
- Odabiranje i analogno-digitalna konverzija

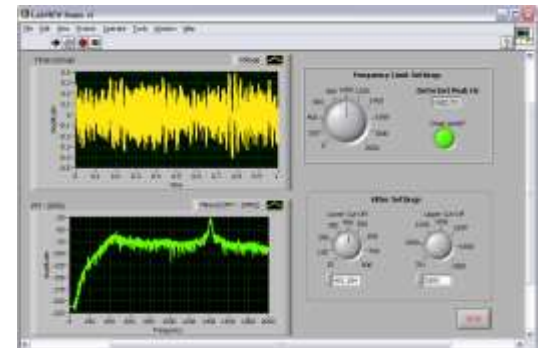




# OBRADA SIGNALA



- Prilagođavanje analognih signala
- Odabiranje i analogno-digitalna konverzija
- Procesiranje binarnih signala
- Metode za procenu parametara signala



# ZANIMLJIVI LINKOVI

- How Power Grids Work (Electrical Engineering)
- <https://www.youtube.com/watch?v=fUWRyhsutL8>
- SCADA Systems for electric power industry
- <https://www.youtube.com/watch?v=WQWJzgbdq1E>
- What is RTU?
- <https://www.youtube.com/watch?v=Ax1jTp2dl9M&t=101s>
- Phase Measurement Unit (PMU)
- [https://www.youtube.com/watch?v=kd\\_rFG7VIA8](https://www.youtube.com/watch?v=kd_rFG7VIA8)
- Understanding the Smart Grid
- <https://www.youtube.com/watch?v=wj3APOiGEfl>
- Top 5 Dangerous Short Circuit Videos (What Went Wrong?)
- <https://www.youtube.com/watch?v=gOT8jx4jEzM>