

# Markets Pricing & Smart Grids

Tuesday 31. januar 2013

## WELCOME

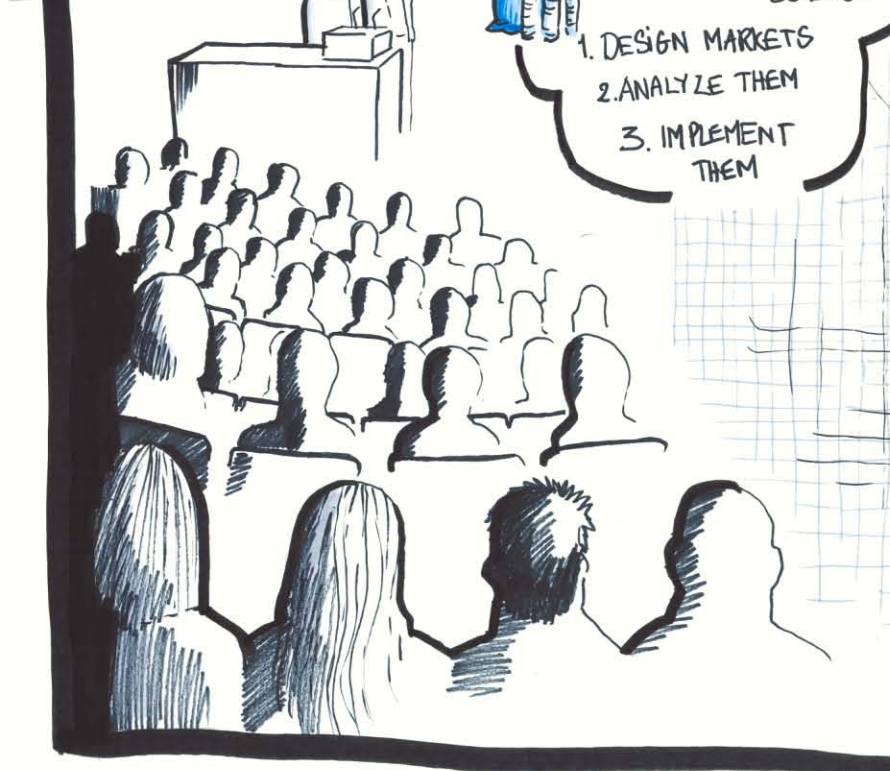
CFEM IS A RESEARCH PROJECT

BACK GROUND: NEW MARKET EMERGE

NEED TO UNDERSTAND

COMBINE: ECONOMIC AND COMPUTER SCIENCE

1. DESIGN MARKETS
2. ANALYZE THEM
3. IMPLEMENT THEM



## ECOGRID EU

2 PROJECTS IN 1  
 • DEMONSTRATION  
 • RESEARCH

"A LARGE SCALE SMART GRID DEMONSTRATION" ON HOW TO MOVE SMART GRID FORWARD IN EUROPE

VERY IMPORTANT! POLITICAL COMMITMENT

2000 PARTICIPATING CONSUMERS IN THE DEMONSTRATION

WHY A REAL TIME MARKET?  
 • AN EFFICIENT WAY TO MEET FUTURE CHALLENGES  
 • AN EFFICIENT INSTRUMENT TO WIDE SPREAD ADAPTION

HOW MUCH CAN PEOPLE DO BY CHANGING THE WAY THEY USE POWER?

KEY POINT: ECOGRID DOES FIT IN THE MARKET BUT NOT THE PART OF THE LOCATION PROCESS

NEXT STEPS: VIRTUAL REALITY WITH FOCUS ON THE CONSUMERS RESEARCHING HOW DO THEY EXPERIENCE THIS?

## THE VIRTUAL POWER PLANT

IN 5 YEARS TIME WE HAVE TO CONSIDER THE OFF SHORE WIND ENERGY PRODUCING

WE HAVE TO DEAL WITH THE CONSEQUENCES NOW!

IF THE SUN IS NOT SHINING - IF THE WIND IS NOT BLOWING - WHERE DO WE FIND THE ENERGY?

CENTRAL POWER PLANT WILL NOT EXIST IN THE LONG RUN

FLIP SIDE: THERE IS A BROKEN LINK BETWEEN FUTURE DEMAND AND SUPPLY SIDE.

NEED FOR FLEXIBILITY

BREAK

SYSTEM STUDIES: HOW DOES IT INTERACT WITH CONVENTIONAL ANCILLARY SERVICES?

## CAN SMART GRID INCREASE COMPETITION?

SMART METERS AND DYNAMIC TARIFFS ARE EXPECTED TO INCREASE COMPETITION

ELECTRICITY IS FOR THE CONSUMER... AND THE CONSUMER IS NOT INTERESTED IN THE RETAIL MARKET

OPPORTUNITIES: SAVING MONEY

INITIATIVES TO STRENGTHEN COMPETITION: YOU MUST CHOOSE A REGULATED PRICE?

FACTS ABOUT THE RETAIL MARKET: 1999 LIBERATION OF DK ELECTRICITY SECTOR

CONSUMERS ARE INACTIVE: SMALL CONSUMERS CAN CHANGE SUPPLIER BUT THEY DON'T

CONSUMERS CAN'T CHOOSE A PRICE: OH, I CAN'T BE BOTHERED...

BENEFIT FOR DK

## CONSUMER FREEDOM

SYSTEM FREQUENCY: ELECTRICITY IS IN DYNAMIC BALANCE

FREQUENCY REFLECTS THE IMBALANCE: FREQUENCY WILL INCREASE THE FREQUENCY GOES DOWN QUICKLY

MARKET BALANCE WITH FRIDGES: MOST FRIDGES HAS COMPUTERS IN THEM

WHERE IS THE FLEXIBLE DEMAND? ELECTRONIC CARS, SPACE AND WATER HEATING, WET APPLIANCES, FUEL MANUFACTURERS

LUNCH: WE WANT A SMOOTH CHANGE IN PRICE. WHAT SHOULD THE ELECTRICITY PRICES DO?

ALL WE NEED IS AN ACCURATE CLOCK

OPPORTUNITIES: LOW COST BROADBAND COMMUNICATIONS, SELECTIVE ROLLOUT, DEMAND CAN PLAY IN BALANCING MANNERS

DAVID HIRST INVENTOR & CONSULTANT

## WORKSHOPS

THE PURPOSE: IDENTIFY THE DATA WHICH CAN PROVIDE A BETTER MARKET REGARDING THE GRID

THE PLAYER: CORPORATE CONSUMERS, PRIVATE CONSUMERS, OSOs, THE GRID, TRADERS, GENERATORS

THE PROCESS: IDENTIFY DATA WHICH STAKEHOLDERS WILL NOT BE INTERESTING IN RECEIVING, WHICH EFFICIENCY WOULD COME OUT OF IT?, BUT IF THEY DID - WHAT WOULD THEY BE?

IT DEPENDS ON YOUR BASELINE

COSTS: SMART METER, EDUCATION, RESEARCH

BENEFITS: LOWER ENERGY COST, INCREASED COMPETITION

FOR SOCIETY YOU NEED TO TAKE COSTS INTO ACCOUNT

IT'S A QUESTION ABOUT UPGRADING BUT IT ALL DEPENDS ON YOUR BUSINESS MODEL

## WRAP UP

WHAT DOES THIS GRID MEAN FOR DIFFERENT STAKEHOLDERS? - THAT IS VERY DIFFERENT

CONCLUSION: GAP BETWEEN SOCIETY & BUSINESS ANGEL

MAPPING OUT TYPES OF DATA PEOPLE ARE NOT WILLING TO PUBLISH - WHY? DIFFERENT REASONS: PRIVACY, FINANCIAL

BEHAVIOURAL CHANGE: REGULATIONS, CONSUMERS CHANGE IN OUR OWN BEHAVIOUR

WHO COULD BENEFIT? FAMILIES, STUDENTS, PEOPLE LIKE YOU & I

BIGGER NEED OF ADAPTING NOT ONLY BECAUSE OF PRICING - BUT BECAUSE THEY WANT TO!

NETWORKING

