



Power @ Speed of Real-time

Bharat Light & Power

INTELLIGENT ENERGY

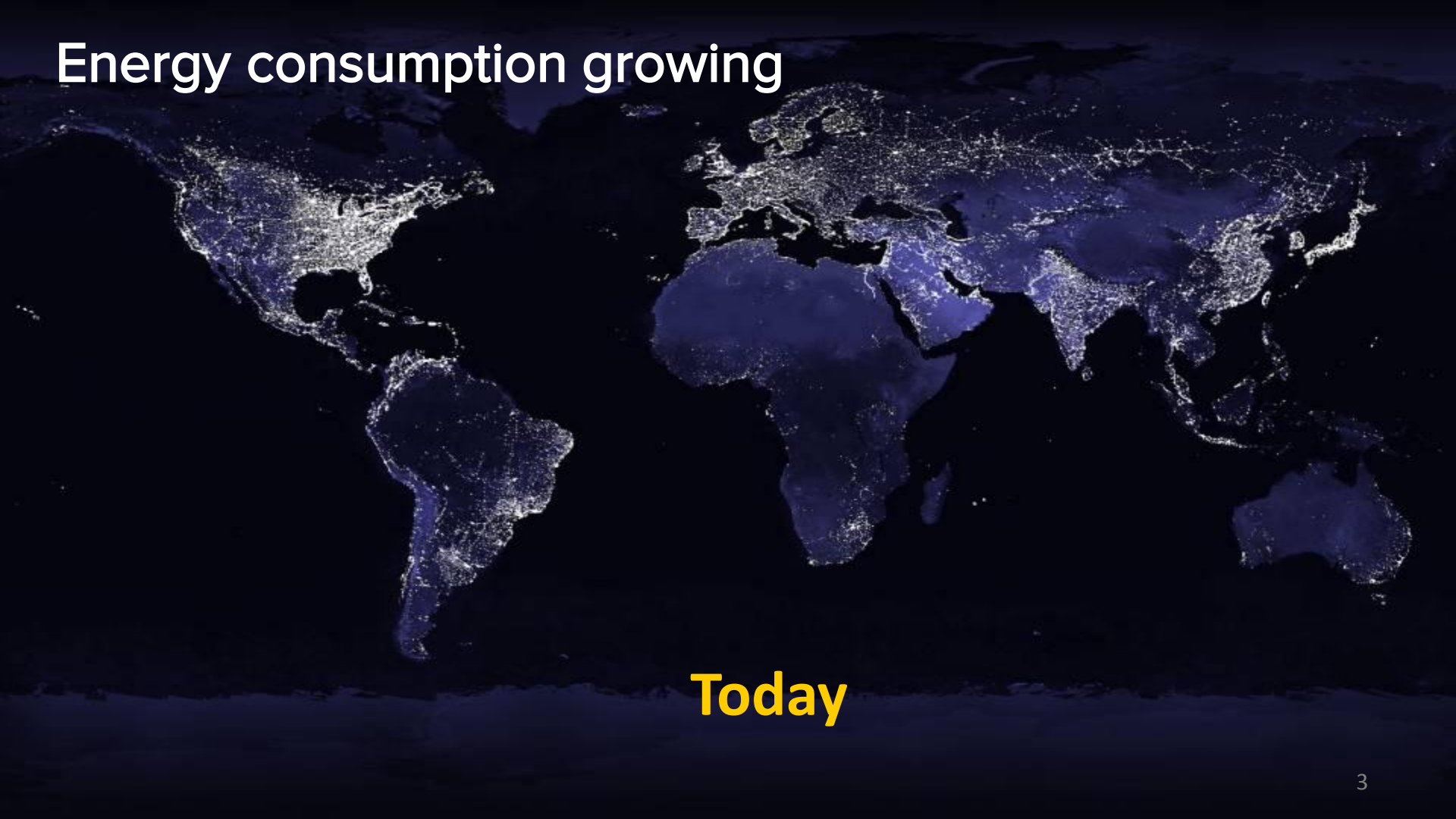
Presented by Balakrishnan G. Iyer
Chief Operating Officer



Power Challenges



Energy consumption growing



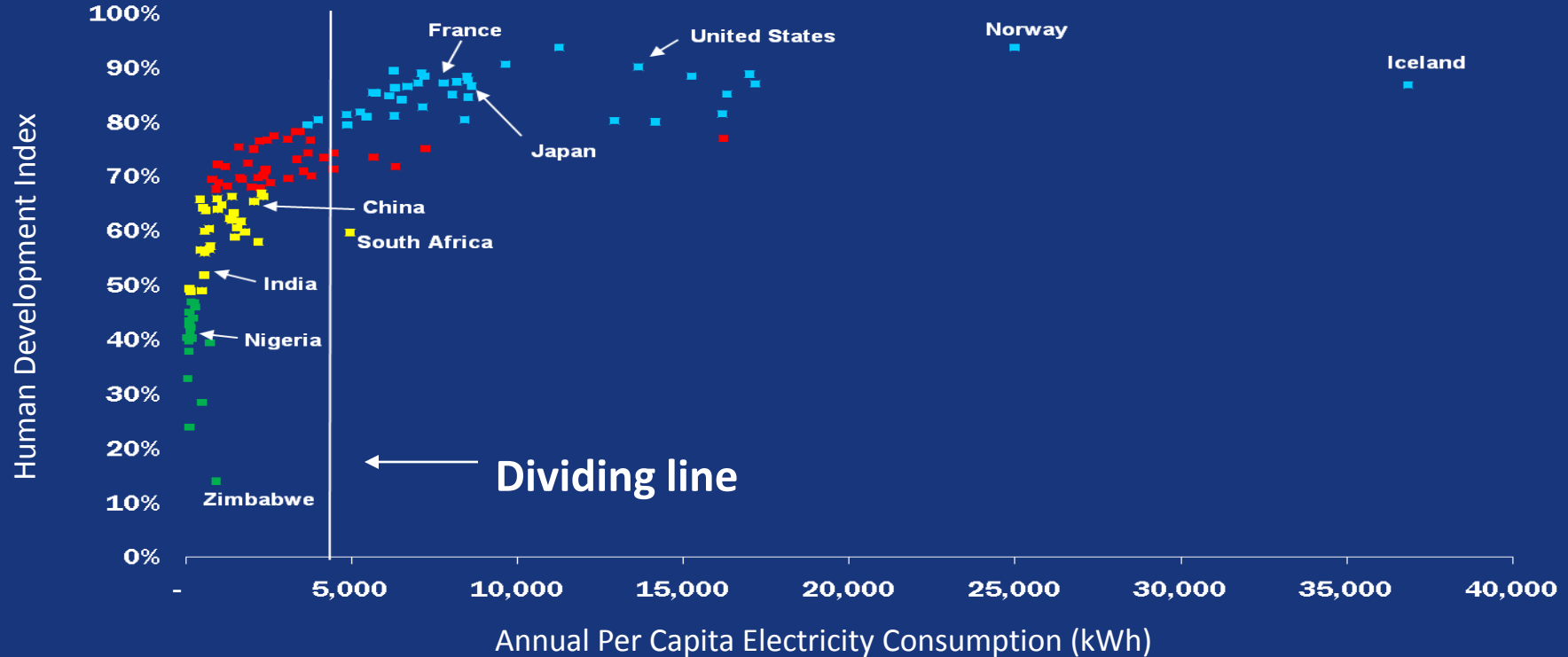
Today

... to unprecedented demands



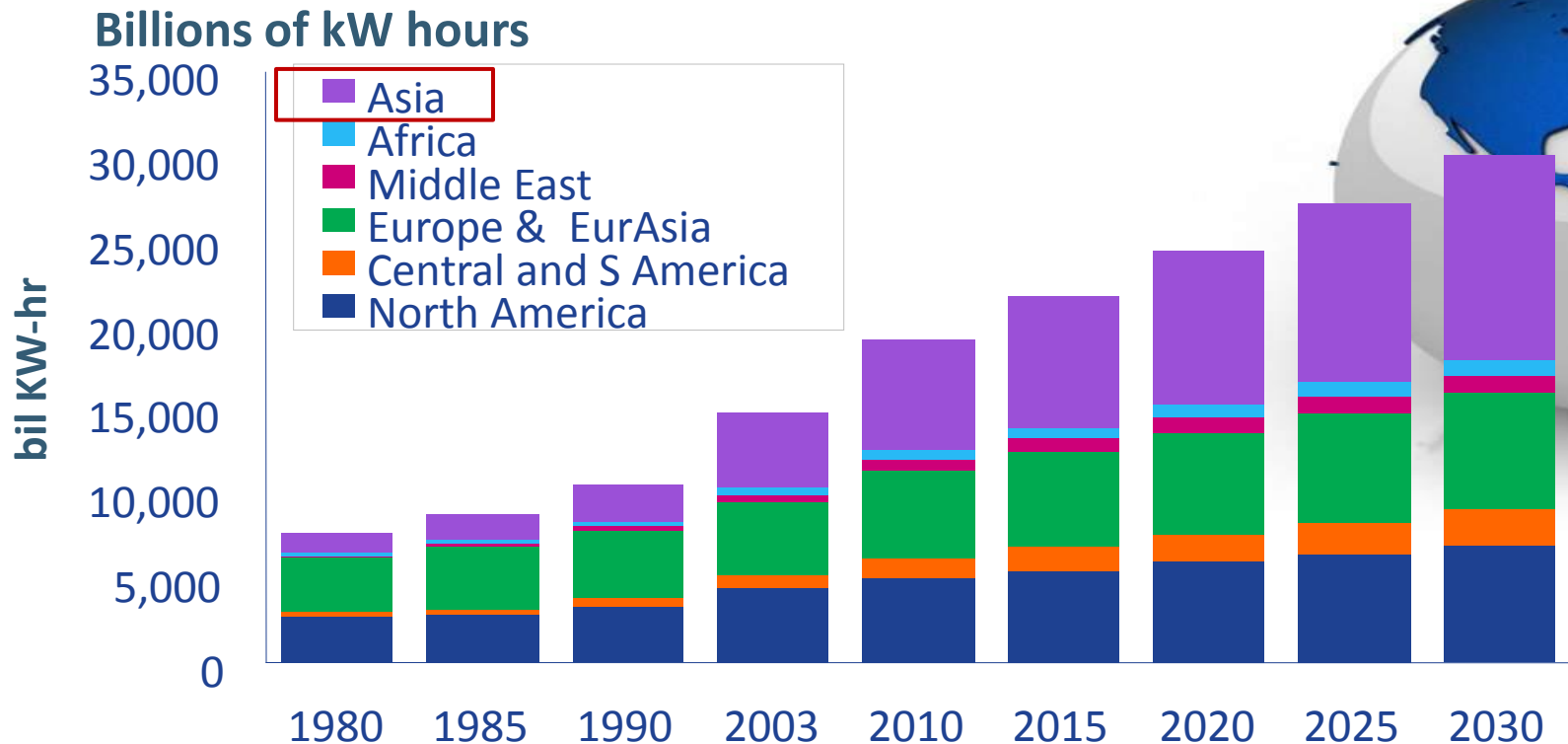
2030

Human Development and Electricity



Source: Human Development Index – 2010 data United Nations; Annual Per Capita Electricity Consumption (kWh)
- 2007 data World Bank

Electricity demand ... 2X by 2030



Sources: EIA-DOE International Energy Annual 2004 & International Energy Outlook 2006

Mega Trends... Asia

Growing
Population



Increasing
Consumption



Outdated
Infrastructure

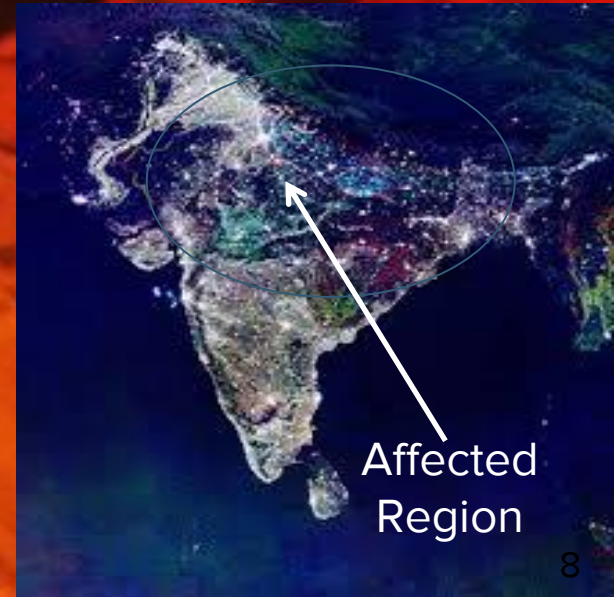


Environmental
Concerns

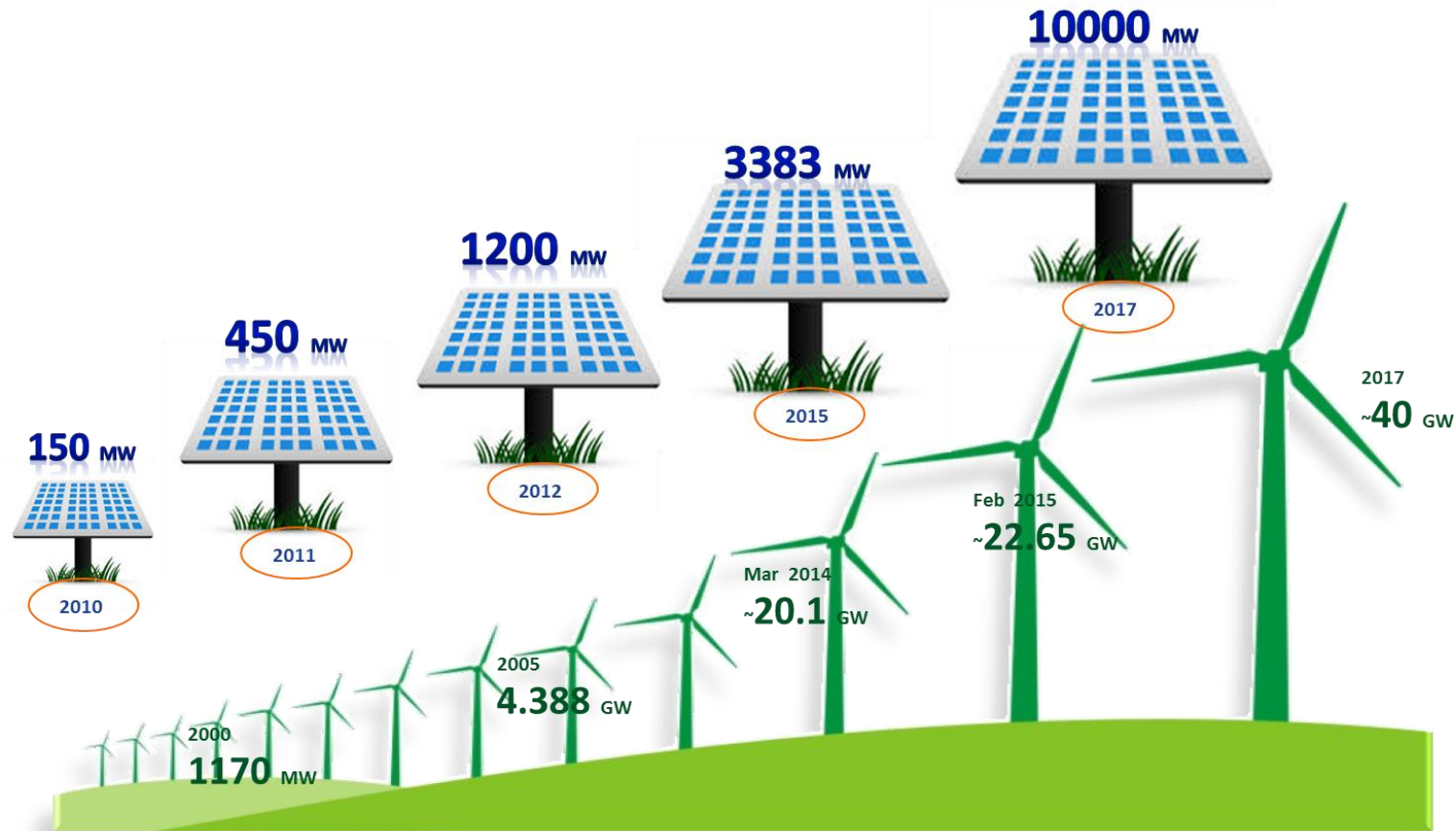


... Creates Big Challenges and Opportunities

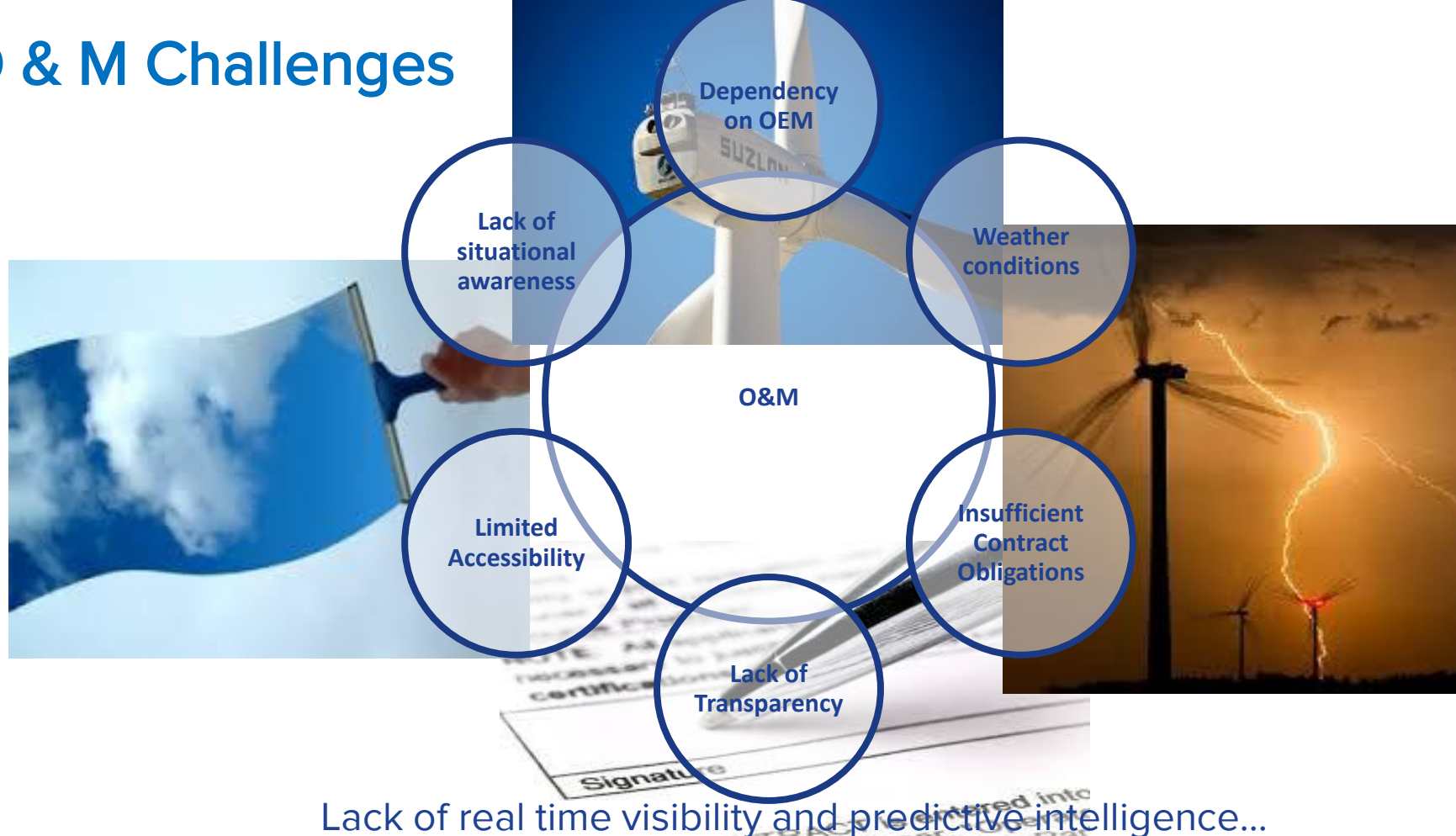
July 30, 2012...



Renewable Advancements in India



O & M Challenges



Lack of real time visibility and predictive intelligence...

Leading to losses



- 1 Gearbox failure
- 3 peak wind months
- 60 % of annual revenue lost

Sequence of Activities

Gearbox Failure
Order for Spare

Crane mobilisation
Component mobilisation
Field staff made available

Component availability @ site
De-erection
Component Replacement
Erection

60 % of annual revenue loss



Our Vision

To improve the quality of life of people by providing clean energy at an affordable price



To provide world class services by leveraging Big Data and Analytics for the energy & utility sector



BLP Approach



Benchmarking from other Industries



Formula One

- ~243 terabytes of data generated
- Stream of data analysed thousands of miles away, Real time



Nike fuel band

- Sensors measure sleep patterns , number of steps you take each day
- Correlates consumer activity data with health issues and trends



NASA Big data efforts

- Earth science data
- Advanced algorithms for climate modelling, etc.,

Conception

Real time Data



Scalable Cloud based Infrastructure



Predictive Intelligence



Visualisation/ Situational Awareness



Seamless Integration



Orion... By BLP



- ✓ 24*7 Active Monitoring
- ✓ Alerts & Watch list management



- ✓ Asset performance report (MIS)
- ✓ Generation tracking against Targets



- ✓ Integrated with ERP
- ✓ Performance Management



- ✓ Predictive Intelligence
- ✓ Rule Engines



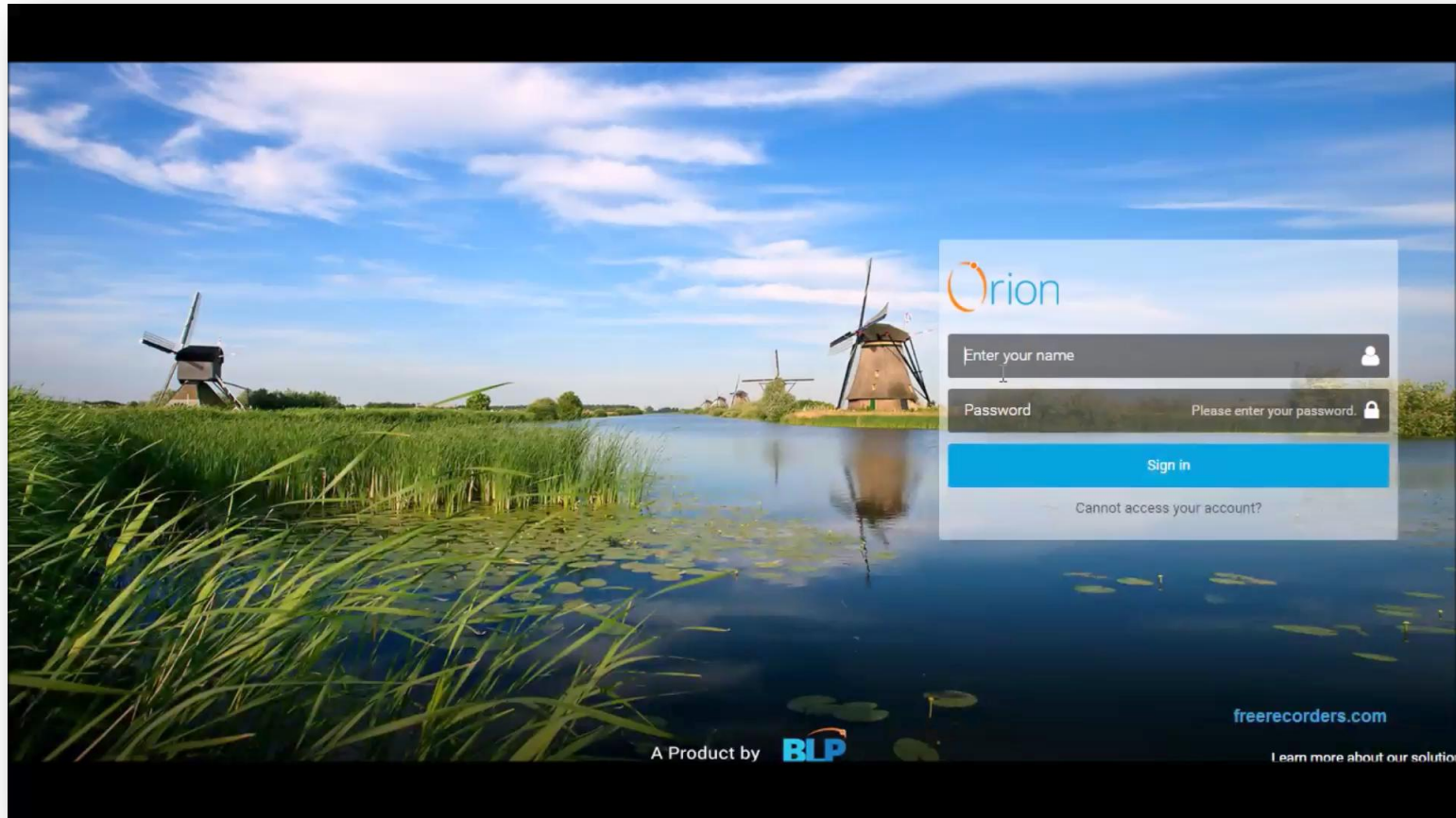
- ✓ Weather modeling
- ✓ Future Data



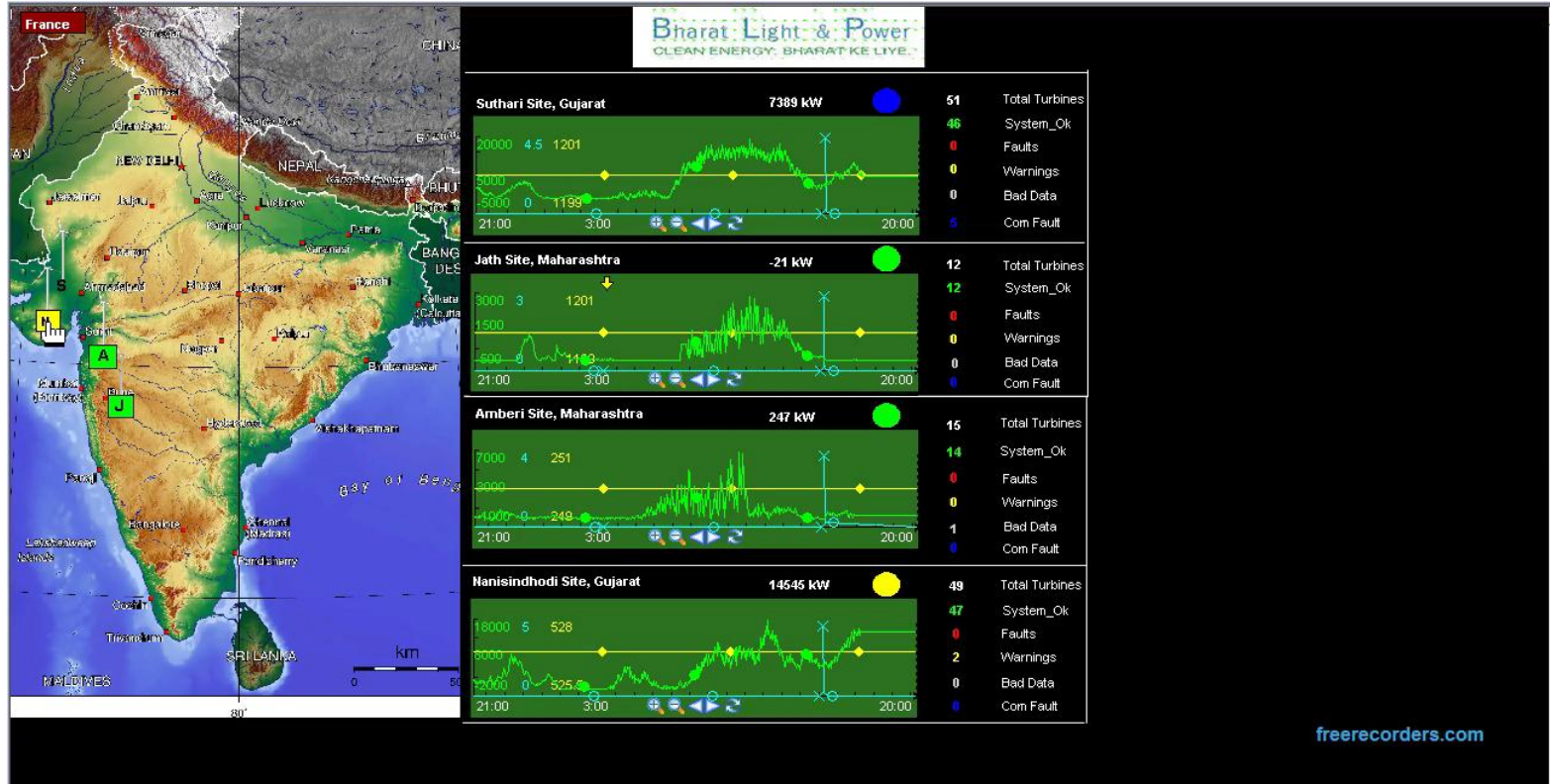
- ✓ Documents Mgt
- ✓ One Stop Shop

Accessible ...Anytime... Anywhere

Orion ... for the Customer



PI ... for the Control Center



Real time monitoring in the Renewable Operations Center (ROC)

Predictive Intelligence Engine

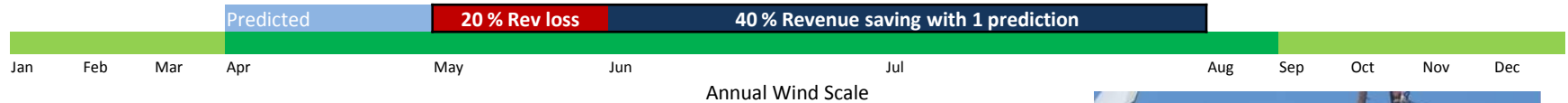


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Leading to...real efficiencies

Sequence of Activities

Order for Spare
Crane Mobilisation
Component availability @ site
De erection
Component replacement
Erection



1 Gearbox failure predicted

Turbine made available for 2 peak wind months

Annual revenue loss reduced to 20 %

Reactive to Proactive



Why OSIsoft ?



OSIsoft.

- Product Maturity
- Scalability
- Global footprint
- Leadership vision
- Nice location for the conference ;)

BLP along with OSI leveraging *cloud, big data and analytics* for the renewable industry

Closing Thoughts



Don't drive looking at the rear view mirror .. Be proactive



Learn from other industries and invent new mistakes



Move away from Power point to operate your business



It takes a cohesive partnership team...spend a lot of time before picking them



Affordable Green Power can only be achieved through operational efficiency

Questions

Please wait for the **microphone** before asking your questions

Balki G. Iyer
Bharat Light & Power





THANK YOU

BLP
INTELLIGENT ENERGY

