THE ROLE OF DIGITIZATION TO IMPLEMENT EnPCs

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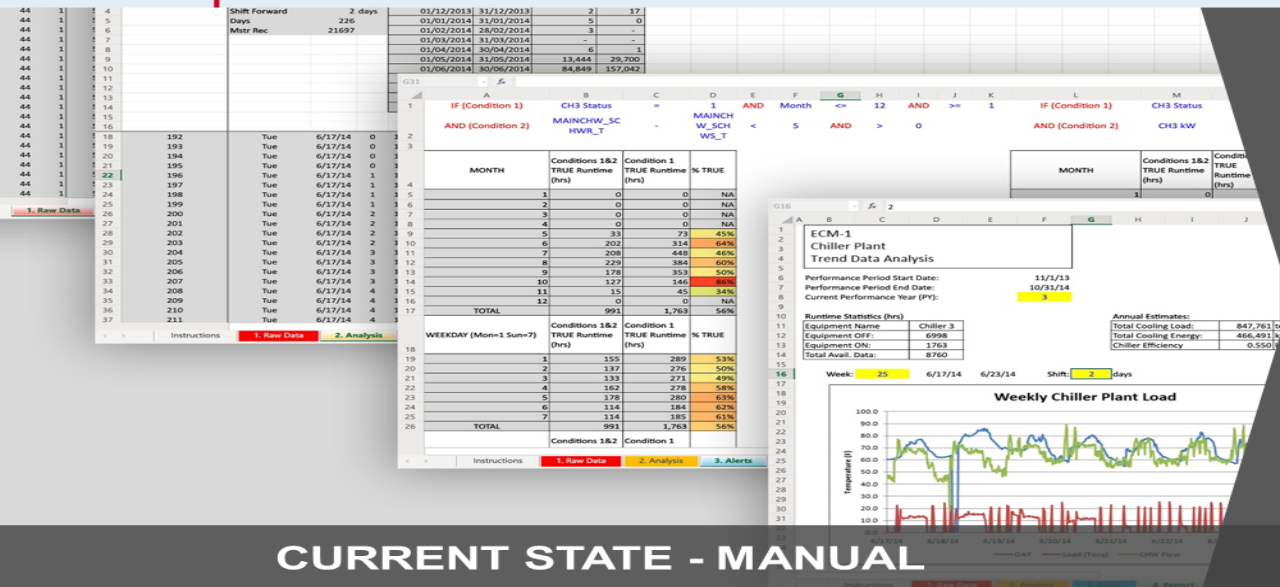
WHY IS DIGITIZATION IMPORTANT FOR EnPCs

- **EnPC's success** are **depending on large amounts of data to be analyzed** for Baselining purposes, Identification of ECM's and monitoring outcomes in line with M&V plans

- Current **ICT technology allows for fast processing of huge amount of data** and run smart algorithms

- The **potential of Artificial Intel (AI) and Data Mining (DM) can be leveraged** allowing for a lot **less of manual or semi automated efforts**

- **High Energy pricing** accelerates strongly the **need for fast implementation and more asset bundling** => larger EnPC's

- **Financing needs to come in with performance guarantees** => EnPC's are seen as an "insurance" or "warranty" to obtain financing agreements for larger and longer projects

- **CEMS** (Carbon and Energy Management System) platforms are **accessible as SaaS** => sizeable to specific EnPC needs

Larger and Faster EnPC implementations are depending on AI& DM powered Digitization

WHAT WILL DIGITAZATION BRING TO EnPC's

Dashboard - Real time analysis to improve business efficiency and demand response

Reports (KPIs, Analytics, Comparison and repository)

CURRENT STATE - MANUAL

FUTURE STATE - AUTOMATIC

- ❑ **Manual process** – Significant usage of spreadsheets, data is static, slow and outdated

- ❑ Current process is a **lagging indicator** – Creates guarantee risk

- ❑ **Risk in data quantity & quality**: Human errors, data is missing or accuracy of data (missing data recreated manually)

- ❑ **No real-time visibility** on savings

- ❑ **Not competitive** - Low technology and not scalable for larger asset portfolio's

- ❑ **Automated process to collect, analyze and optimize** – Improve the granularity of data for performance

- ❑ **Leading indicator** for the performance guarantee & outcomes

- ❑ **Data cleansing algorithms to improve data quantity** & quality (Automated) - Improving response to negative deviations and minimizing impact to guarantee

- ❑ **Dashboards, automated alerts** and exception reports for Data Quantity and Quality and cost avoidance

- ❑ **Integrated solution** on Cloud platform (Utilities, Weather & BMS)

- ❑ **Higher guarantee to projected savings** ratio can produce **larger project bundles** (currently 92% guarantee can move to 99%)

1 NON-INVASIVE LOAD MONITORING & DISAGGR.
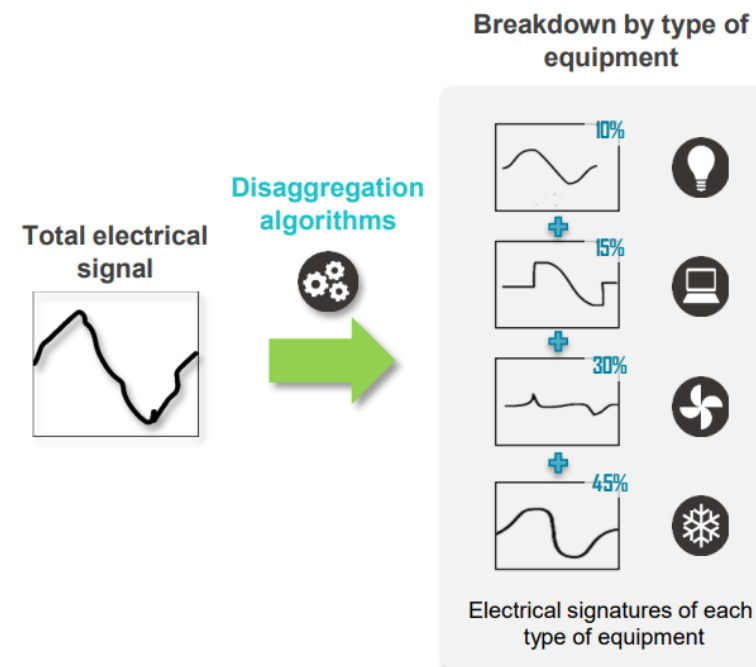
1. SMART METER	2. LOAD DISAGGREGATION

- Can be used as Smart Meters – whether as Main Meter or Sub-Meter inc. daisy chaining

- Up to 99% accuracy of measured load
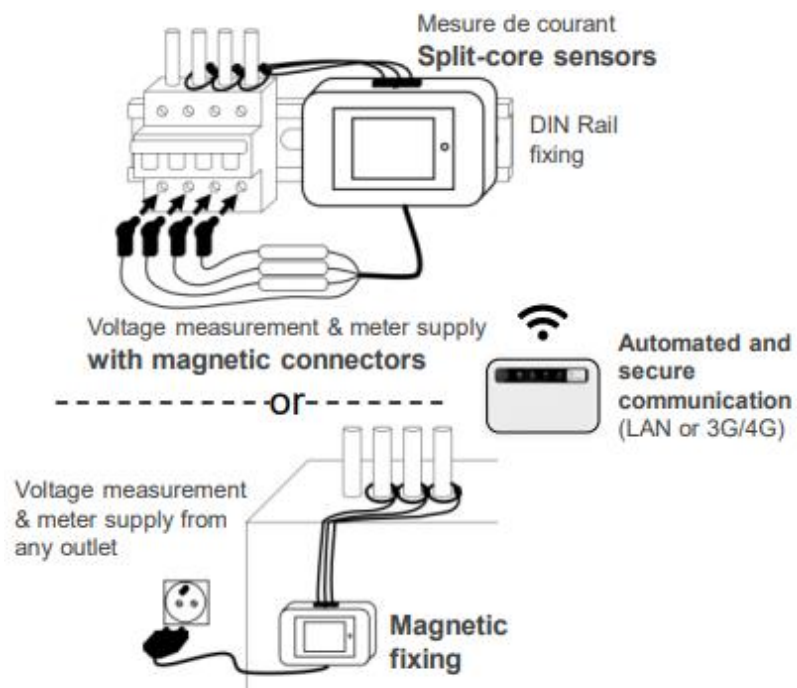
- Used for load disaggregation across asset classes

- ~95% accuracy for load disaggregation
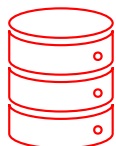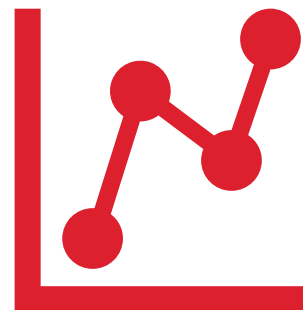
MAIN AREAS of EnPC DIGITIZATION

3 M&V MONITORING & REPORTING

Dashboard - Real time analysis to improve business efficiency and demand response

Reports (KPIs, Analytics, Comparison and repository)

COLLECT

1. ECM & smart **meters**
2. **Trend** Data collection
3. **Utility** Data
4. **Weather** data integration

ANALYZE, MONITOR & ACT

1. Data **Cleansing** for Quality and Quantity – Enter missing data and rectify abnormal data
2. Data quality monitoring
3. Data **Normalization** – Evaluate the impact of energy conservation efforts
4. Utility Cost (Tariff escalations)
5. **Baseline adjustments**
6. Dashboard - Real-time Monitoring & Tracking to evaluate (consumption, savings, performance, benchmark)
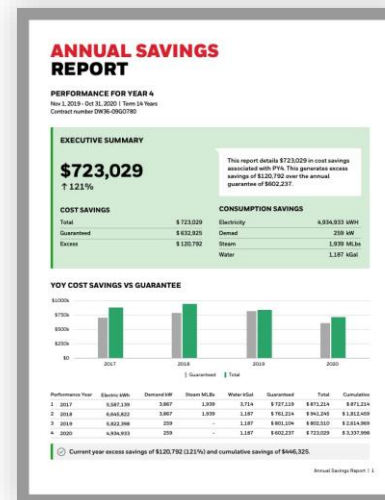7. Reports (KPIs, Analytics, Comparison and repository)

MONITOR

1. **Dashboard** - Real-time Monitoring & Tracking to evaluate (consumption, savings, performance, benchmark)
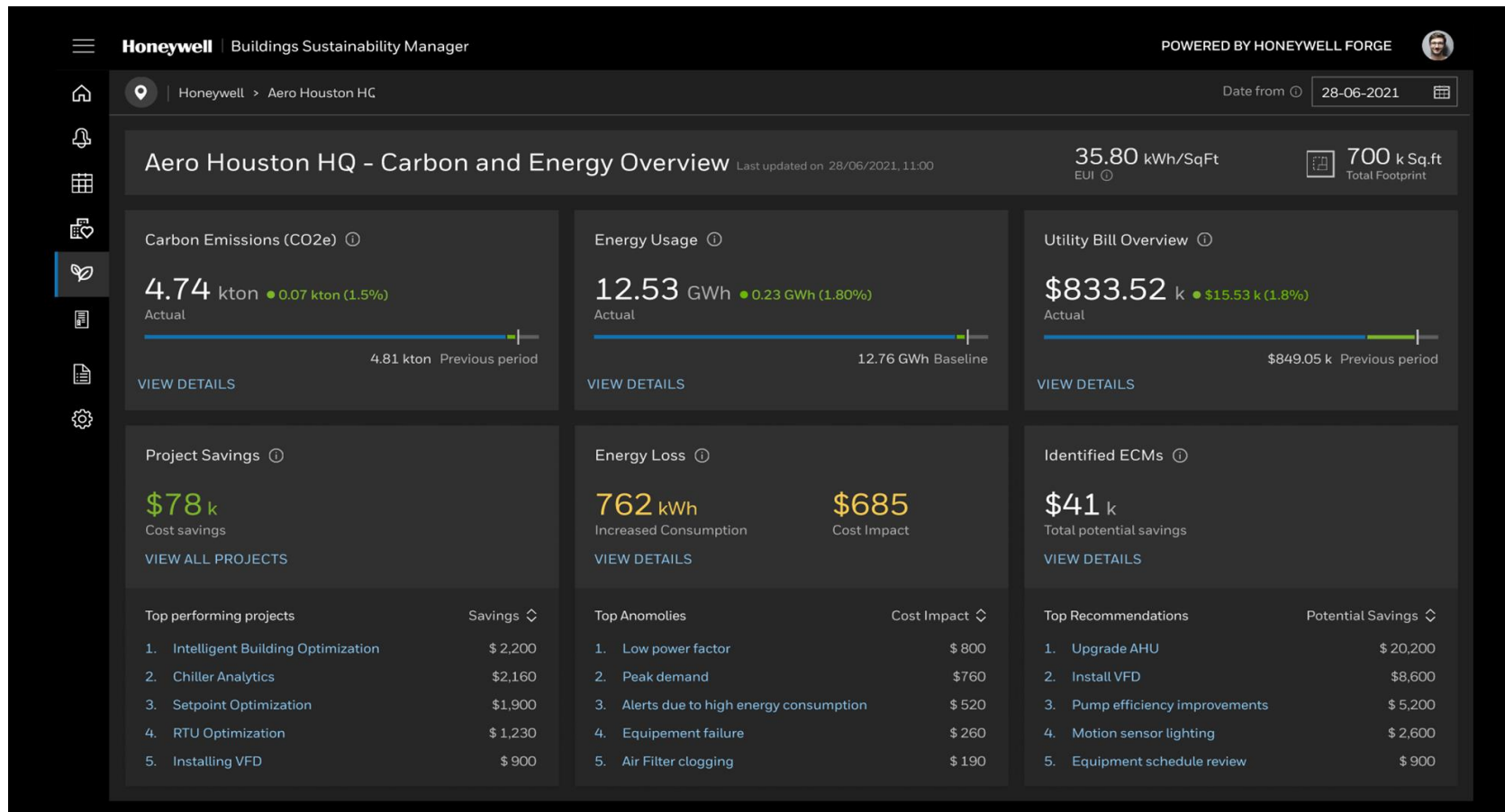2. **Reports** (KPIs, Comparison and repository)

MAIN AREAS of EnPC DIGITIZATION

PROGRAM PERFORMANCE

1. Performance on Carbon Depletion and Savings per project and ECM

2. Energy Usage and Loses versus baseline

3. Top Performing projects, Animalities and Recommendation

4. Identification of additional potential ECM's for further improvements (AI/ML)

CONCLUSION

Digitization is a Key Enabler for Larger and Faster EnPC implementations!