

Large Scale Sensing

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We need sensing on a global scale

Understand the impacts of human activity on the planet

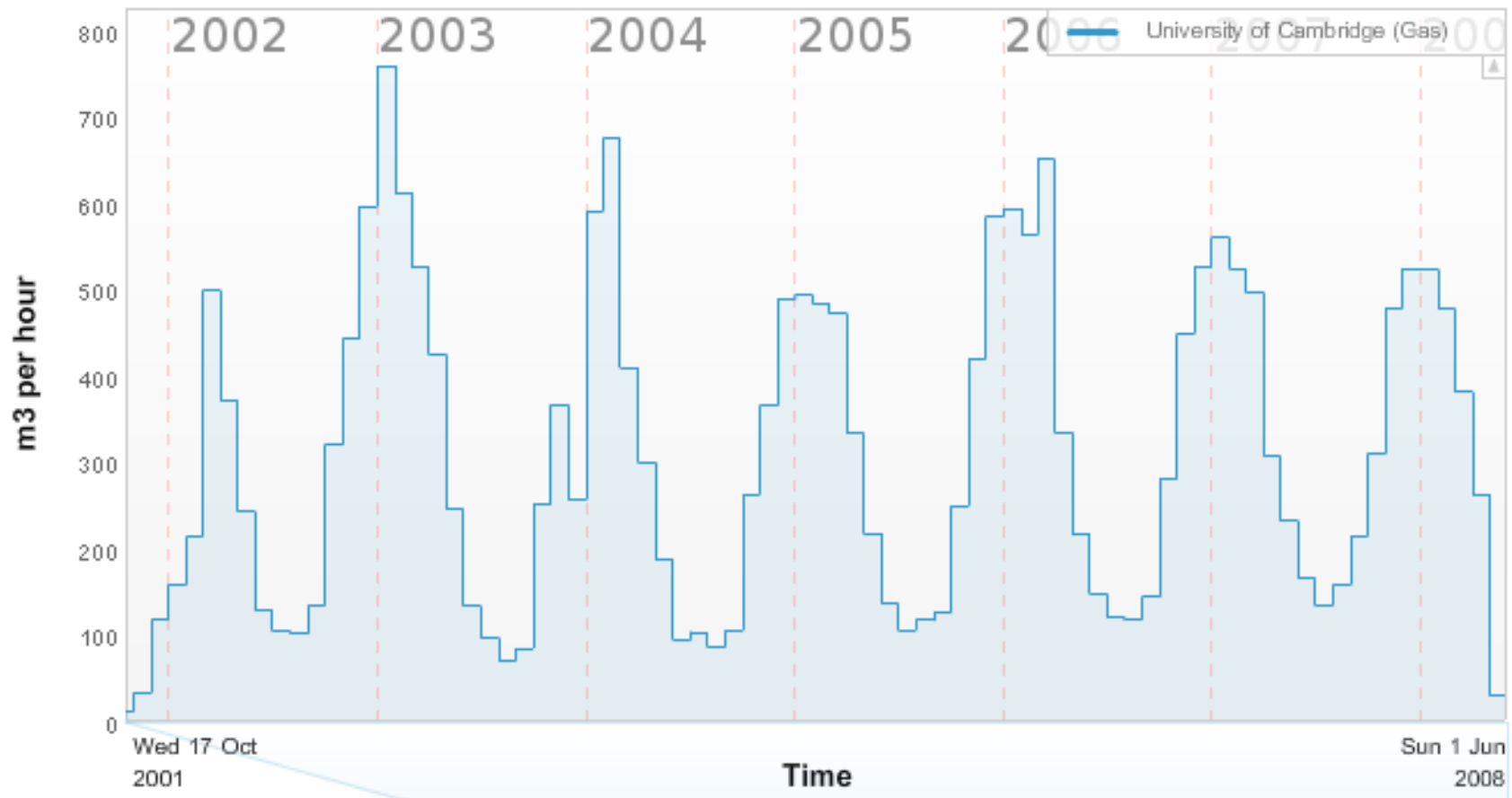
Optimize our use of physical infrastructure

Make better predictions about the future

Computing for the Future of the Planet



Cambridge University meter reading



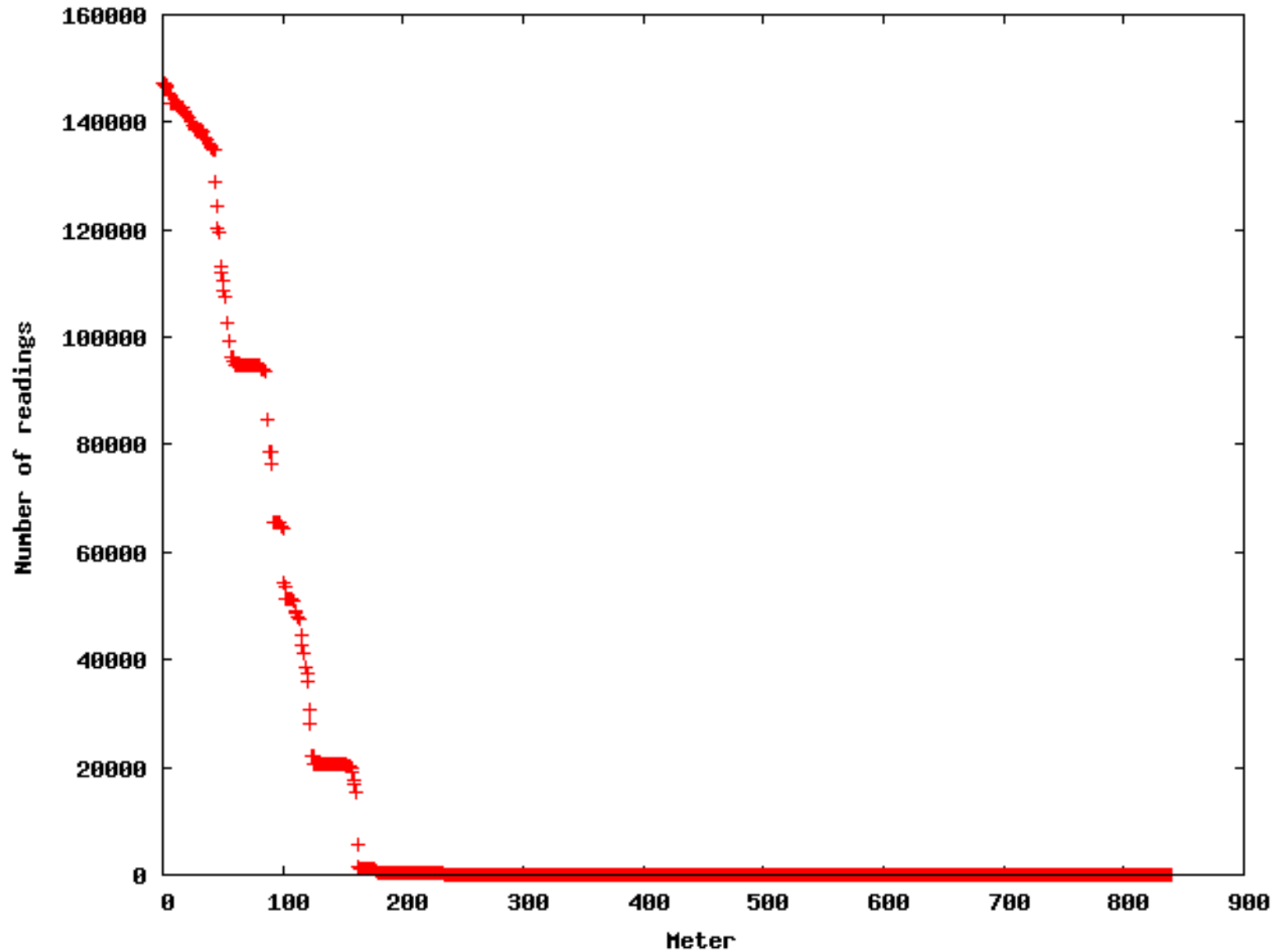
13 million readings starting in Sep-1996 from 1300 meters

Problem 1: Multiple data sources

- EMBS Energy Manager
 - some remote read meters
 - some electric company reports
 - some log but manual reader
 - some reports by telephone
- Trend building management system

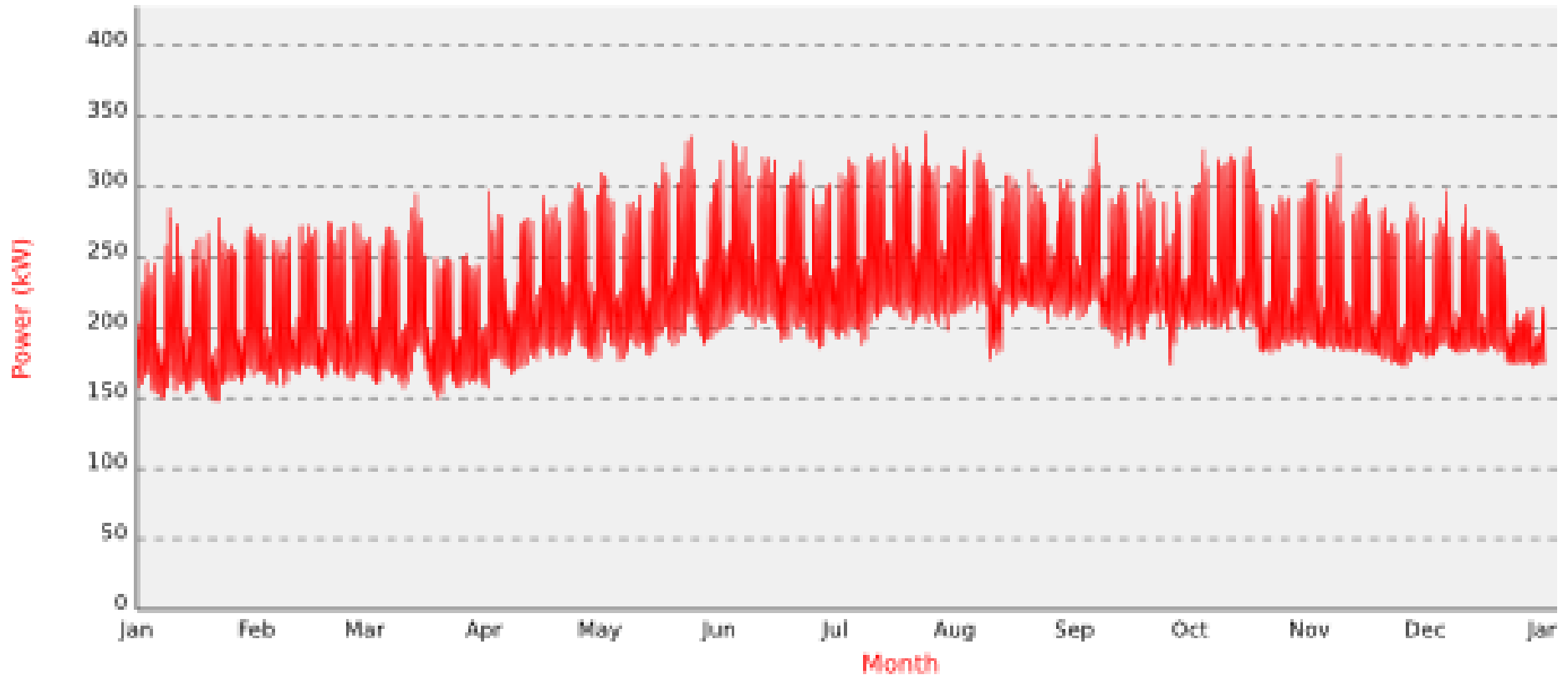
*Don't expect that a large system
will ever be homogeneous*

Problem 2: Varying fidelity



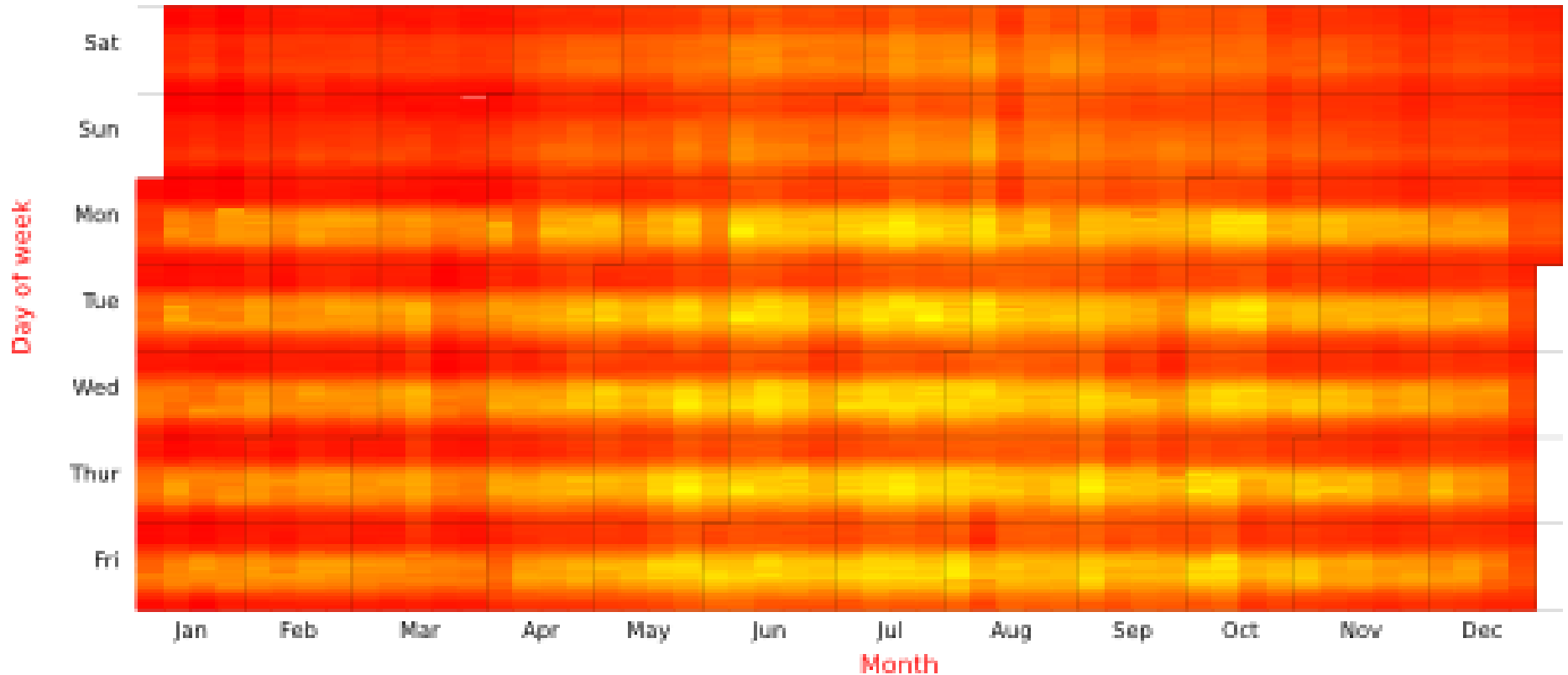
William Gates Building has 30 minute readings

2007 half hourly electricity consumption



Finding ways to present this information is fun

2007 half hourly electricity consumption



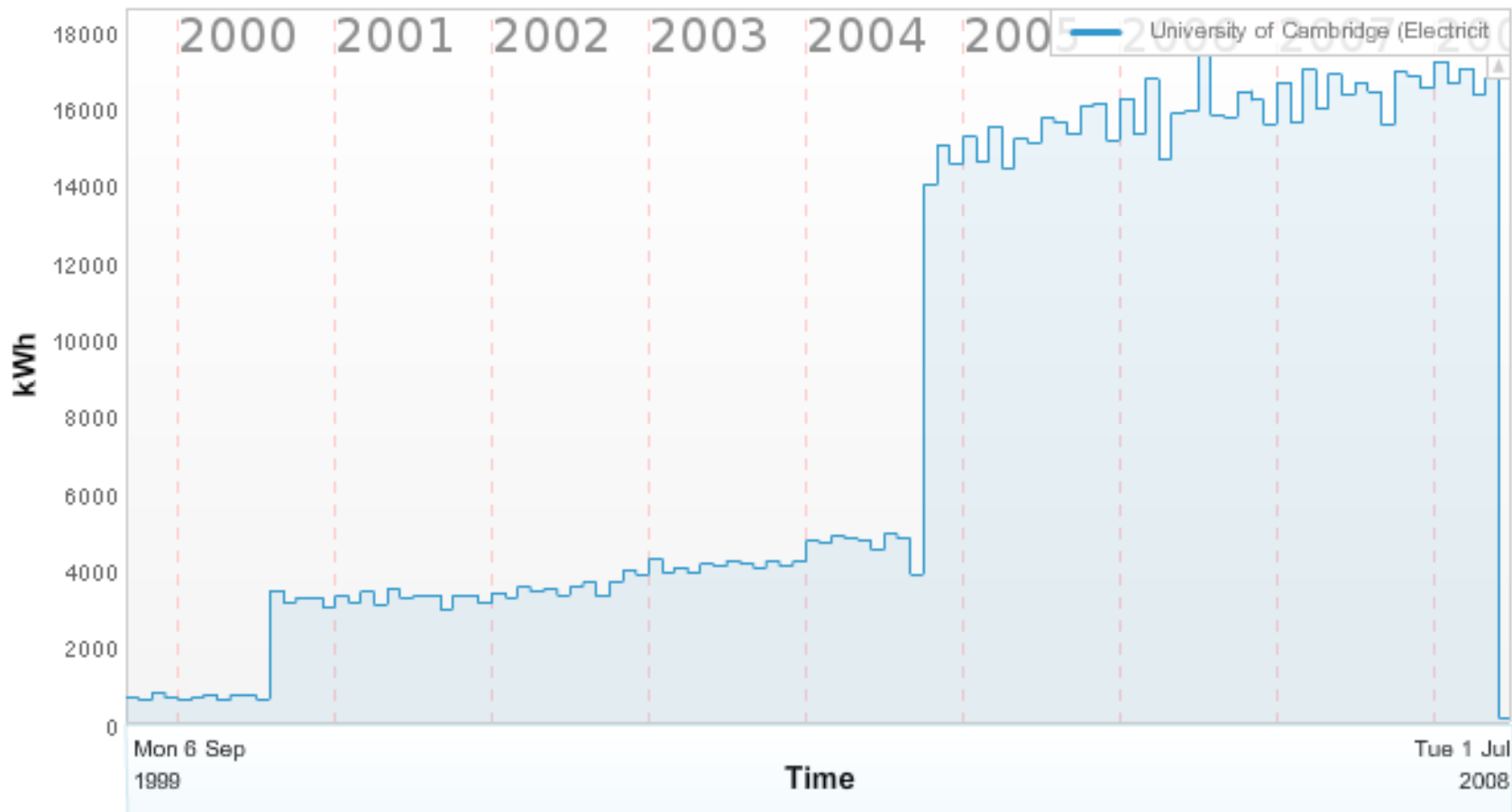
Red => low consumption
Yellow => high consumption

Problem 3: Aggregated readings combine data of varying quality

- Meter reading schedules are inconsistent
- Interpolation of values
- Performance - what can we pre-compute?
- Consistency

*Combining data sets of varying
quality is troublesome*

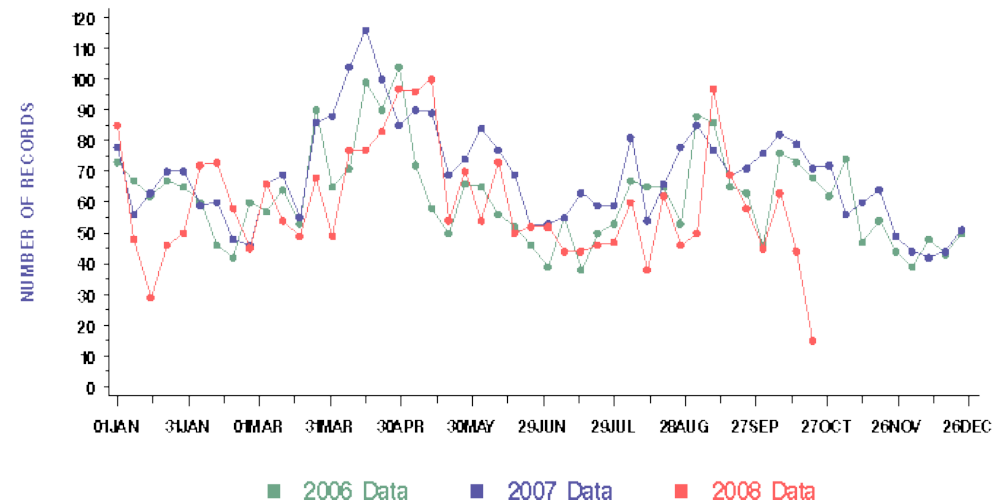
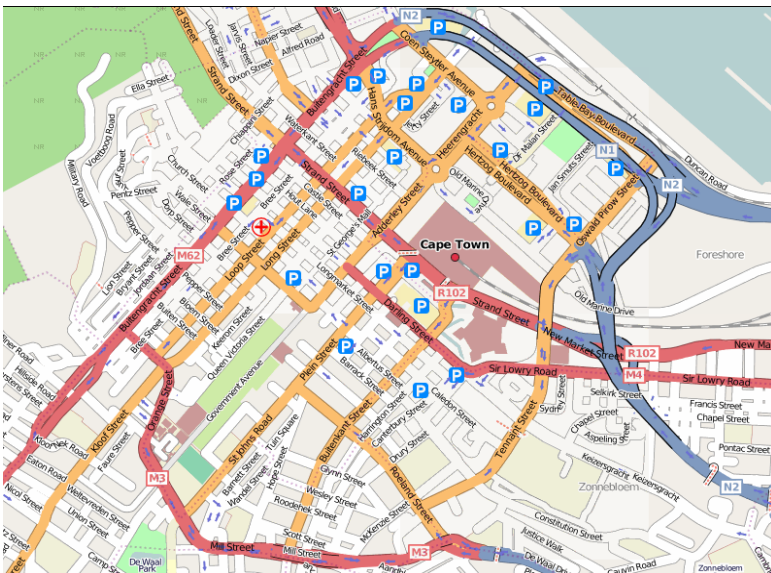
Problem 4: Null != 0



Need to understand and communicate how good each data point is

Can we generalise the concept of Human Sensors?

- Manual data reporting is surprisingly common
 - Telephone in your meter reading
 - RSPB bird migrations
 - OpenStreetMap



End

From the Android Software Development Kit Documentation:

		temperature sensor Only the first value is defined for this sensor and it contains the ambient temperature in degree C.		
int	SENSOR_TRICORDER	A constant describing a Tricorder When this sensor is available and enabled, the device can be used as a fully functional Tricorder.	64	0;
float	STANDARD_GRAVITY	Standard gravity (g) on Earth.	9.80665	

⊕ **Constants inherited from interface [android.os.IBinder](#)**

[DUMP_TRANSACTION](#), [FIRST_CALL_TRANSACTION](#), [FLAG_ONEWAY](#), [INTERFACE_TRANSACTION](#), [LAST_CALL_TRANSACTION](#), [PING_TRANSACTION](#)

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