Systems Integration Case Study

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Overview

- Systems Integration overview
- Case Study – Vattenfall AMI Project
- Lessons Learned

Case Study – Vattenfall, Sweden

Systems Integration Overview

- **Known by various names:**
  - **Services,**
    - **Integration**
    - **Global**
    - **Professional**
  - **Solutions,**

- **Systems integration costs > component costs**

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Nationwide AMI deployment late 90's

- **System design approach used**
  - Meet requirements at lowest *installed* cost
- **High level requirements:**
  - Reduce customer "churn"
  - Reduce operational costs
  - Increase revenue

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Features defined to meet requirements:

- **Multiple remote services:**
  - Automated meter reading
  - Thermostat
  - Home Security
  - Eldercare
- **Access to all services via cell phone & Internet**

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- **System designed to meet requirements**
- **Components designed to fit into system**
- **System integration ties it all together**
  - **Components**
  - **Networks**
  - **Databases & Software**
  - **User Interfaces**
- **System *installed cost* was minimized**

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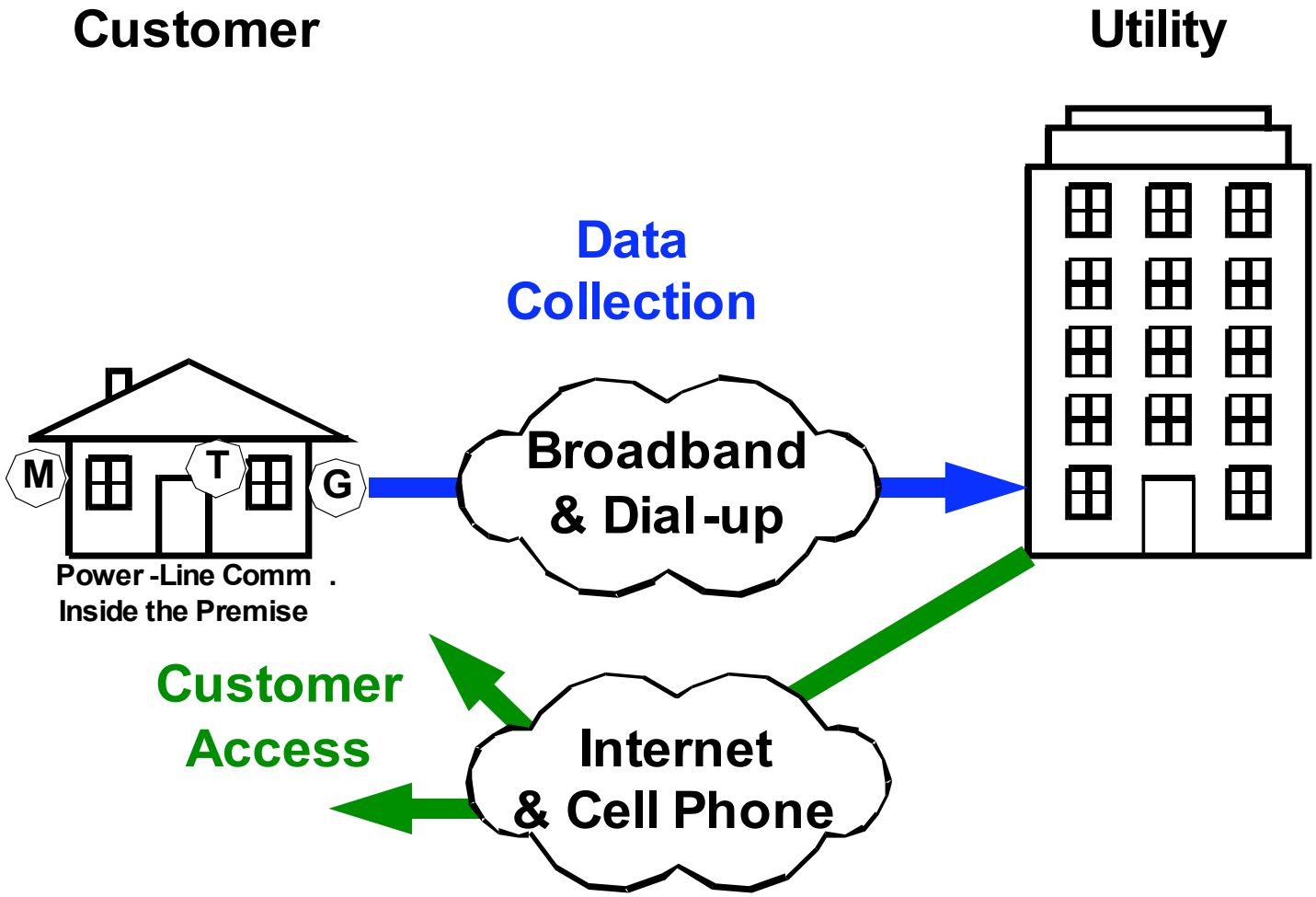
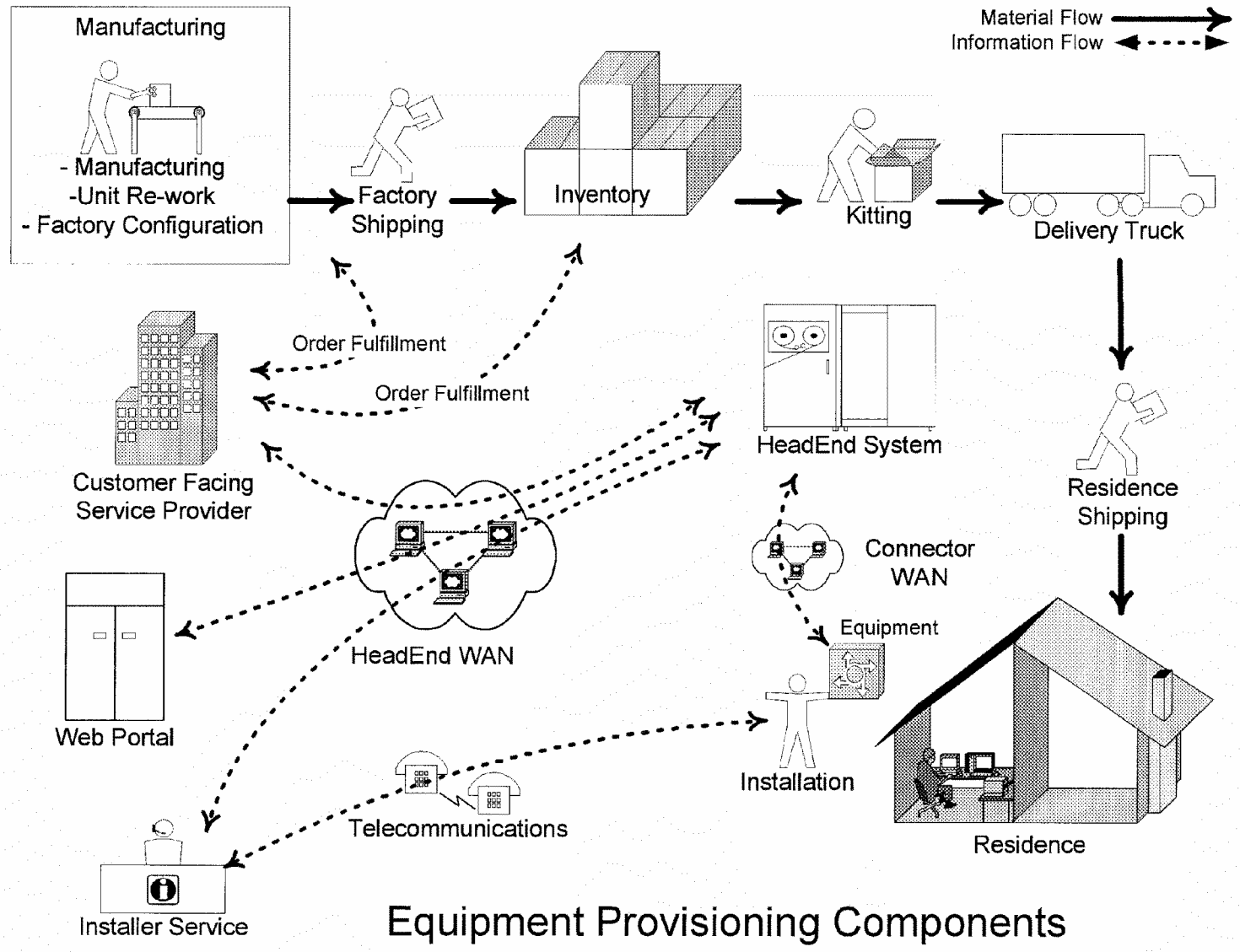
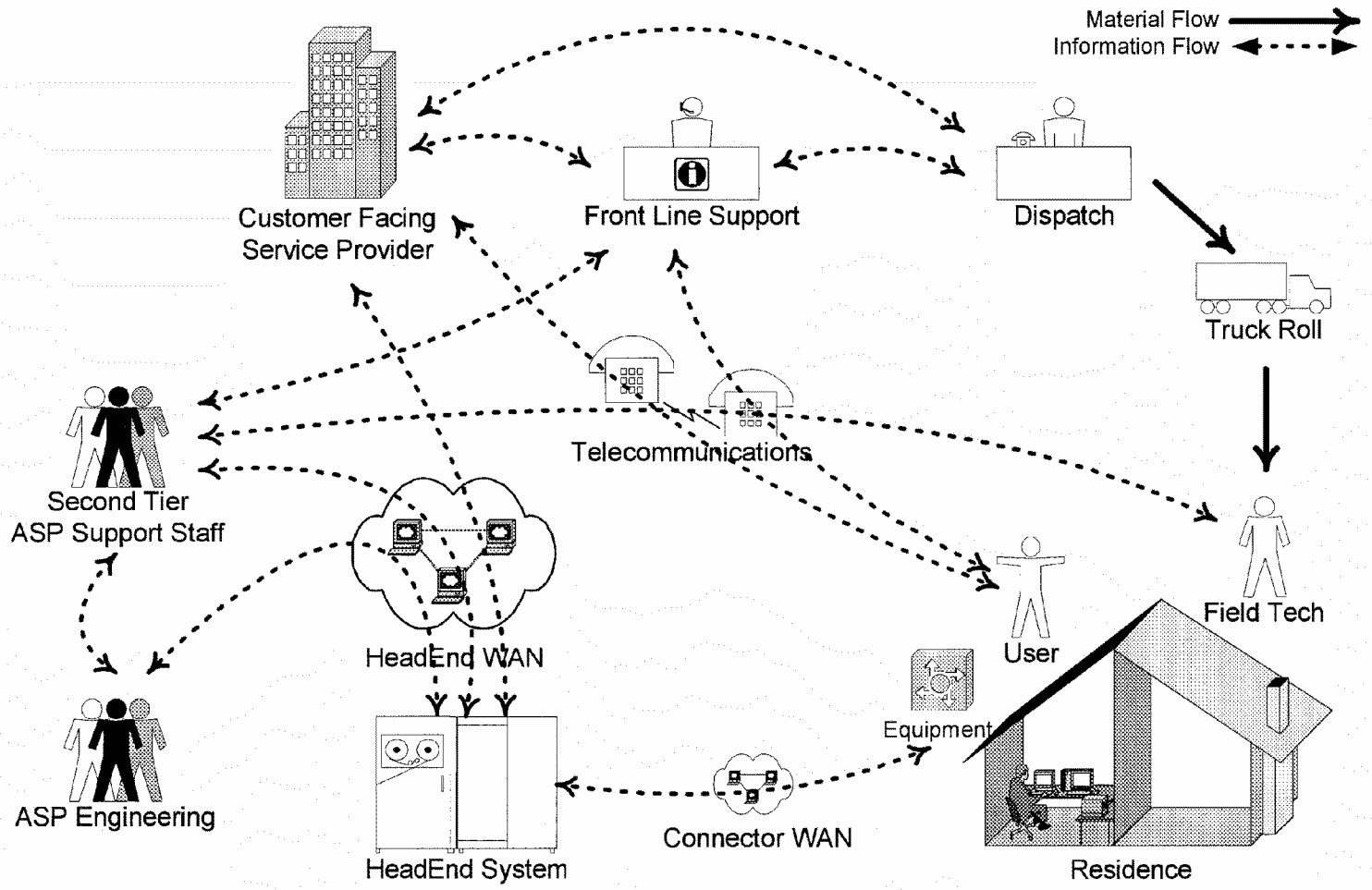




Equipment Provisioning Components



Customer Support Components

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Lessons learned *(1 of 4)*

- **Complete system design should be done in advance:**
  - Define requirements of system
  - Cost optimize the system
    - **Include systems integration & lifecycle costs**
  - Minimize late design changes

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Lessons learned *(2 of 4)*

Lowest cost components may lead to higher installed system costs

- **Example 1: Address assignment – Linking device to an individual customer**
  - Lowest cost component may use dip switches (save $2)
  - Dip switches require professional installation (add $150)

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Lessons learned *(3 of 4)*

Lowest cost components may lead to higher installed system costs

- **Example 2:**

  Privacy of customer data
  - Lowest initial cost may omit encryption
  - Lifecycle costs could mushroom if a security breach necessitates replacement

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Lessons learned *(4 of 4)*

Even with advanced planning, deployment issues will emerge:

- **Gov't phone company equipment didn't meet gov't specs.**
- **Power line communications interference in ~5% of homes.**
- **10% of the sites accounted 90% of the tech support labor.**