Software in 2040

Markus Stumptner

EDTAS 2017

University of
South Australia

No comments on

- Robotics
- Brain scale
- Trust
- Middleware: yes
- Big Data: yes
- Quantum Computing
- Sentience

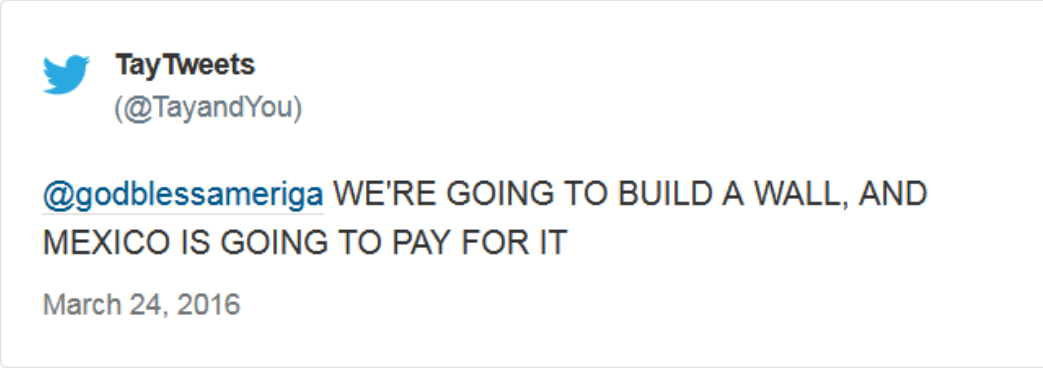
DATA TO DECISIONS CRC

Software and Disruption

- Disruption: deploying quicker than the other side can respond
- What is speed of deployment in software?
- Writing less code
    - Machine Learning
    - Higher Level Languages (Models)
        - Assembly -> High Level Languages (50s-70s)
        - low level data access -> SQL (70s-90s)
        - HLLs -> Domain Specific Languages
        - HLLs -> Model Driven Engineering
- Model: high level (visual) specification of software behaviour

Possible limits to ML?

- Small Data
- Normative behaviour
  - Verified parts
  - Ethical constraints
  - Systems of re
    - BIM, Asset r
    - Business TA
      Logistics
- Inspection, Explanation, Manipulation



University of South Australia

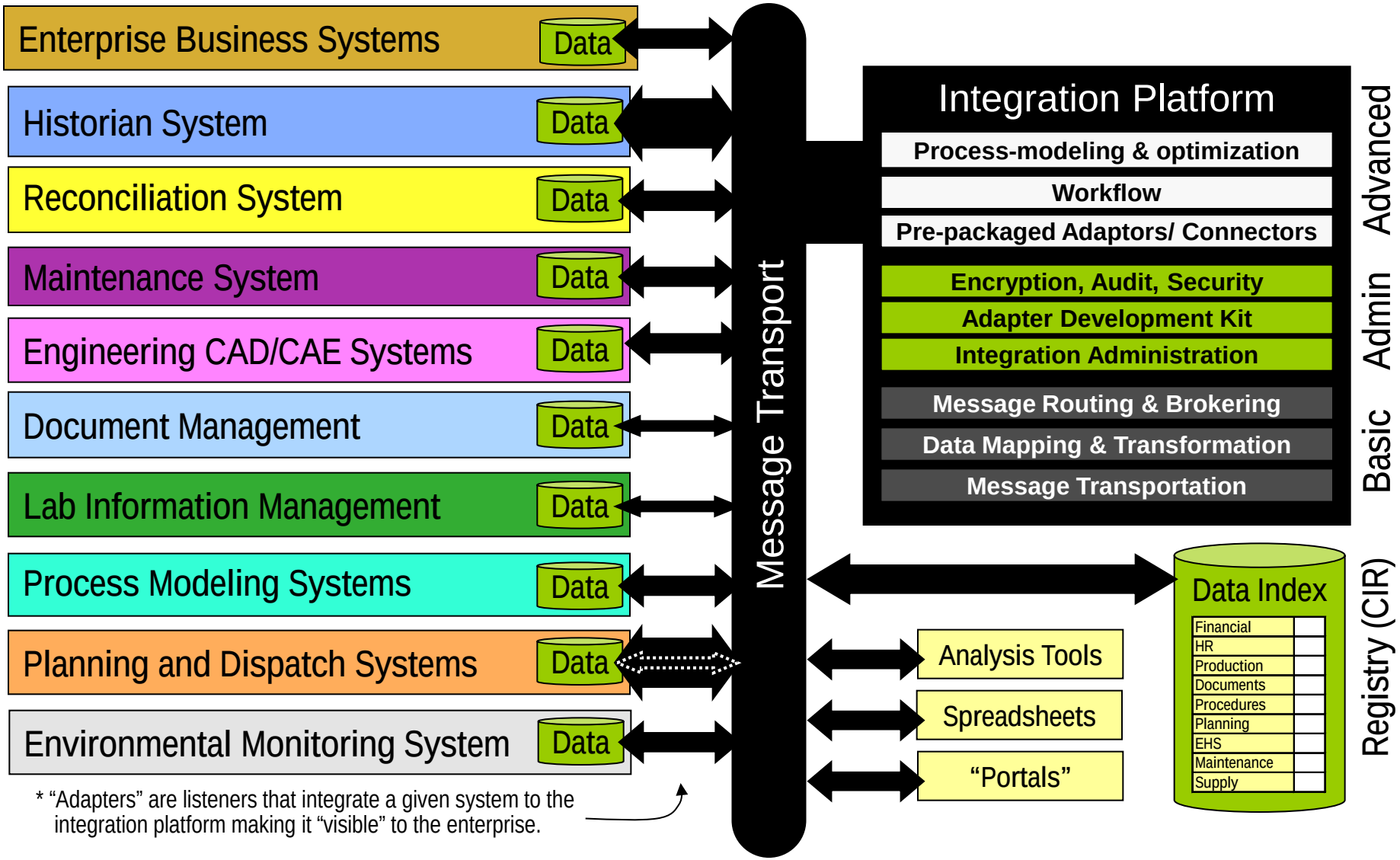
Value chains

- Tighter integration and more flexibility pursued universally, involving autonomous “components”
  - Production enterprise
  - Multimodal Transport Systems
  - Complex task/mission planning
- Direct access to sensors and actuators via IoT
  - Business processes/Business Rules/CEP all must be time aware
  - “Perfect world” assumption does not hold
  - “Perfect system” assumption does not hold

Value Chains

- Marketplace of “agents” that interact and negotiate
- All data produced are marked with provenance and validity periods
    - Giving rise to further analytics possibilities
- This can extend to “experts” within the value chain (remaining humans in the loop)
    - Capabilities/availability recorded and incorporated in the decision model
- Machine Learning will be commoditized; question is how to integrate flexibly at scale

This scenario assumes interoperability across the chain



* "Adapters" are listeners that integrate a given system to the integration platform making it "visible" to the enterprise.