Library service-oriented architecture to enhance access to science

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Overview

- CISTI's Service-Oriented Architecture (SOA) experience
- The challenge of frameworks
- SOA and the library catalogue
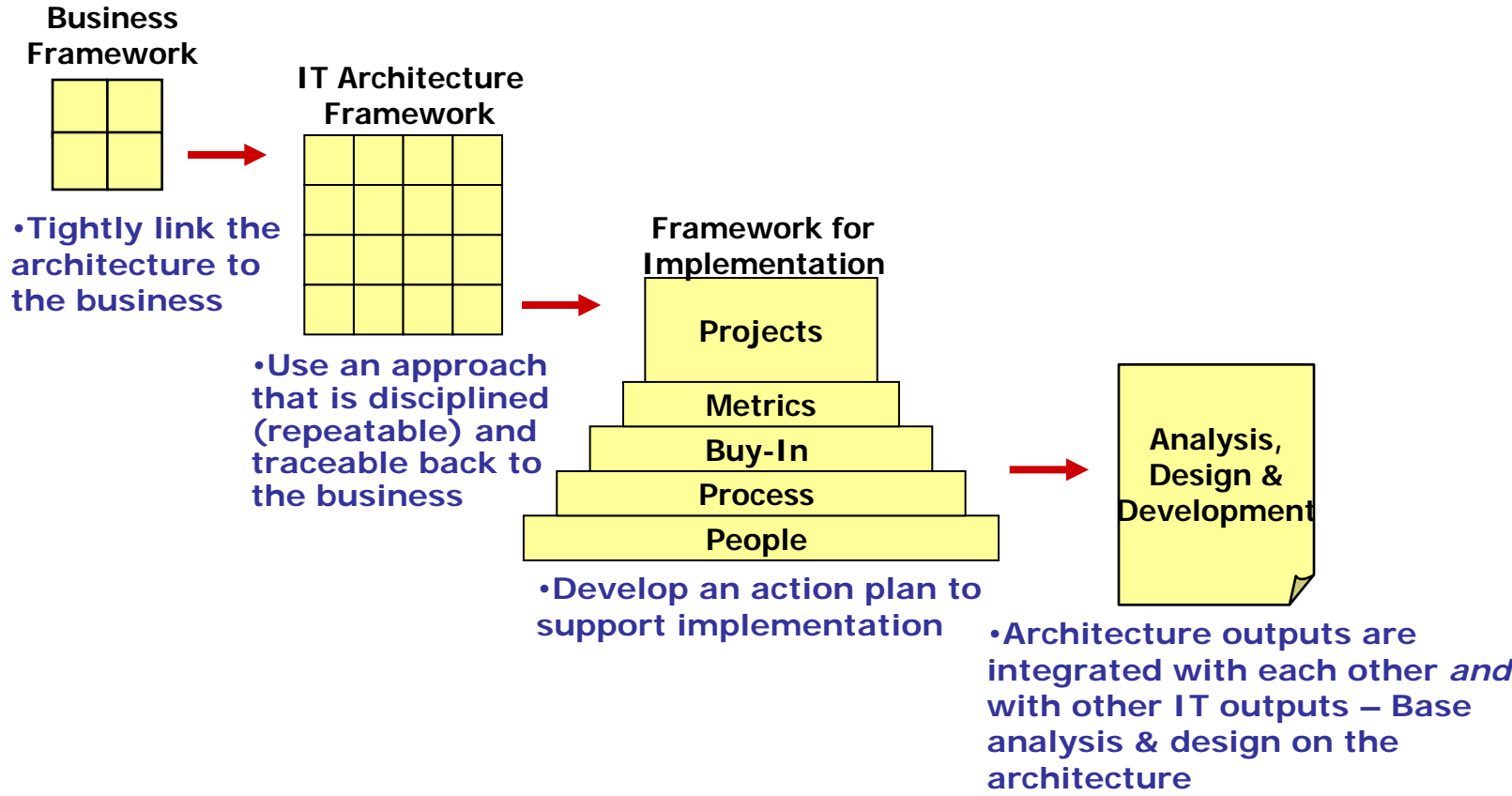- Library SOA and science

The Team

- CISTI is Canada's National Science Library, with a staff of over 300, serving thousands of clients
- The Technology and Research directorate has approximately 60 staff, of which about 30 perform software development and research
- A five-person Architecture Group was formed
- Buy-in from management was essential; communication of architecture concepts was and is one of the key roles of the group

SOA Definition

- Service-Oriented Architecture is an approach to systems analysis - a systematic methodology for identifying particular characteristics of business processes and technology, leading to the definition of "SOA services"

- See the paper for more information

CISTI EA Methodology – Infomajic

Business Framework

•Tightly link the architecture to the business

IT Architecture Framework

•Use an approach that is disciplined (repeatable) and traceable back to the business

Framework for Implementation

Projects

Metrics

Buy-In

Process

People

•Develop an action plan to support implementation

Analysis, Design & Development

•Architecture outputs are integrated with each other *and* with other IT outputs – Base analysis & design on the architecture

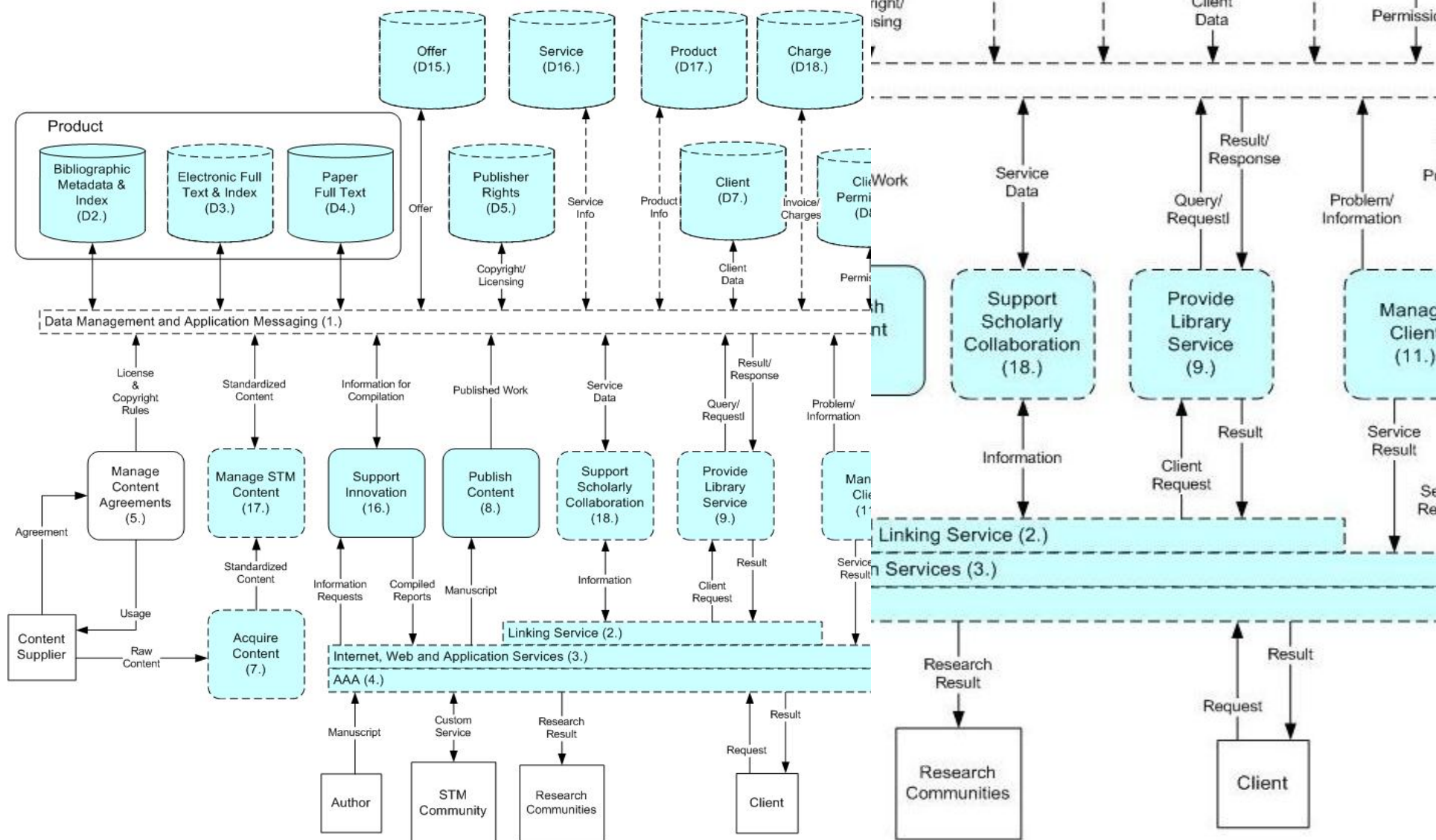by permission of Jane Carbone, Infomajic

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Key Methodology Points

- Must have an integrated view and flow from business needs, through architecture, to selected projects and implemented technologies

- Capture business needs at a strategic level

- Your organisation must be willing to devote time to architectural analysis

- Well-defined projects are key to successfully implementing the architecture, but they rest on a foundation of people and processes

CISTI Results - Models

- CISTI Level 0
  - Provide Library Service
    - Get Document
    - Find Document
    - Price Document

- Many others for other aspects of our business

CISTI Enterprise Architecture: Level 0 Execution Domain

CISTI Results - Projects

- Pay-Per-Article (PPA)

- eBook Loans – architectural analysis greatly reduced complexity, reduced effort by about 50%

- Federal Science e-Library Gateway – save approximately 60% due to existing PPA components

- Alerts – save about 20% of effort thanks to PPA components

- Reduced effort frees resources for organisational agility

CISTI's SOA Experience

- A dedicated group is needed for architecture – architecture is different from development
- Choose a practical methodology, and don't be distracted by complicated vendor offerings
- Communicate Communicate Communicate
- Ensure the business understands the benefits and challenges
- Ensure the development team understands the technology aspect
- Identify achievable projects that include services

Frameworks

- There are at least 8 frameworks, e.g.
  - JISC (UK), e-Framework (UK & Australia), DLF (USA), CDL (California), DEFF (Denmark), …

- Getting stuck in framework analysis paralysis may actively impede progress

- Can we come to a consensus on some common elements?

- Remember: Standards organisations can mainly codify existing best practices - it is much more difficult for them to create consensus

SOA and the library catalogue

- The traditional library catalogue is a closed, proprietary system
- When improving it, we must take care not to repeat the past
- SOA provides an approach to enhancing the catalogue that is sustainable
- SOA also opens up the possibility of greater WebOPAC and network capabilities (mashups, widgets, machine-to-machine services)

Destroy the Silos!

Examples

- Denmark – DEFF XML Web Services
- Koha – Nelsonville Public Library
- BIBSYS – Norway
  - See "Moving towards a service-oriented architecture" (PDF)
- Talis – UK – demonstration applications
  - Project Whisper
  - Project Cenote
- National Library of Australia – IT Architecture Project Report (PDF)
- CISTI Pay-Per-Article

Library SOA and science

- Science increasingly takes advantage of networked, machine-readable services for data and computation (e-Science)
- Academic libraries need to understand and participate in these networks in order to remain relevant
- Consider whether your organization has capabilities that could be offered as services in order to enable integration in scientific workflows
  - SRU/SRW catalogue query
  - Data ingest
  - Journal article search
  - OA archive exploration
  - Text and data mining

Observations

- SOA must move beyond frameworks in order to be usable
- SOA Governance is key
- The "Big Bang" approach doesn't work
- Creating an SOA (and Enterprise Architecture) is not for everyone
  - But everyone can participate as a service consumer

Enabling Library SOA

- "Library Web Services and Service-Oriented Architecture", *Library Journal*, July 15, 2007, in press

- CISTI Lab
  http://lab.cisti-icist.nrc-cnrc.gc.ca/

- Supplementary bookmarks
  http://www.connotea.org/user/scilib/tag/iatul2007akerman

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