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2015 Engineering & Construction Conference

Construction Technology Solutions

Can’t Work With Them, Can’t Survive Without Them

Tom Pendergast
Tara Hall
June 18, 2015

Agenda

Module/Topic
Introduction
Technology Solutions Today
Selection Strategies
Implementation Strategies
Q&A

Technology Solutions Today

The State of Technology in E&C

Industry	Revenue $250M	Revenue $10B
FEDERAL GOVERNMENT	10.80%	7.90%
SOFTWARE AND INTERNET	8.40%	5.40%
BANKING	7.30%	6.20%
EDUCATION	5.60%	3.30%
PROFESSIONAL SERVICES	5.60%	3.40%
MEDIA	5.40%	3.20%
INSURANCE	5.30%	2.90%
TELECOMMUNICATIONS	4.90%	3.80%
STATE AND LOCAL GOVERNMENT	4.60%	1.80%
UTILITIES	4.20%	1.70%
HEALTH CARE	3.50%	3.30%
TRANSPORTATION	3.50%	2.30%
PHARMACEUTICALS	3.00%	2.60%
RETAIL AND WHOLESALE	1.90%	0.90%
CONSTRUCTION & MATERIALS	1.60%	1.10%
AVG.	**5.04%**	**3.32%**

- Construction industry is last in IT spending compared to 14 other industries
- The smaller revenue companies actually spend more on IT than the larger companies
- Underspending on IT may be a short sighted strategy
- 70% of US productivity growth comes from IT
- IT investment is one of the key drivers in attracting and retaining young talent

- **Are you putting yourself in a competitive disadvantage?**

SOURCE: GARTNER IT KEY METRICS DATABASE, 2012

Technology Solutions Today: Enterprise Resource Planning (ERP) - The “Big Guys”

What are the Trends

- ERP is here to stay
- Capabilities continue to improve
- Industry best practices included
- User experience is included
- Social collaboration is more focused
- Cloud offerings increasing choices

Capabilities to Look For

- Included customization layer (vanilla?)
- Deep functionality in HR, Payroll, GL, AR and AP
- Project based vs. Product based
- Robust field services capability

What Defines Success?

- Data integration to PM tools
- Reduction of silo systems (MS Excel)
- Reduced G&A cost while increasing revenues
- Don’t implement like a construction project

Shortlist for E&C

- Oracle EBS
- Oracle JD Edwards
- SAP

Technology Solutions Today: ERP - The “Little Guys”

What are the Trends

- Size of the organization typically dictates the use of “Big” vs. “Little” ERP
- Lots of adequate alternatives for small to mid size companies
- Project focused

Capabilities to Look For

- Typically less care and tending
- Out of the box Project Management
- Differences are product maturity; functionality; union payrolls, equipment, and PM integration
- Lack of customization layer

What Defines Success?

- Look at all capabilities, not just Project Management
- Pick partners that know E&C
- Fundamentals, not bells/whistles
- Pick partners with strong client base that can grow with you

Shortlist for E&C

Sage - #3	Microsoft Dynamics SL
Viewpoint – CFMA recognized	Deltek
CMiC - #1	Penta
Spectrum	COINS
Computer Guidance (CGC)	

Technology Solutions Today: Best of Breed - The "ERP Gaps"

What are the Trends

- ERP solutions want to be everything for everyone
- Companies complimenting with construction management software

Capabilities to Look For

- Integration qualifications
- Exceed current requirements, you will grow into the solution faster than you think

What Defines Success?

- Stick to the core solution for back office functionality
- Try not to customize
- Recognize there are gaps in ERP functionality for this industry and look for the right solutions to integrate

Shortlist for E&C

Estimating	**Scheduling**	**Project Mgt.**
Hard Dollar	Primavera P6	Prolog
HCSS Heavybid	FastTack Schedule	Ecosys
Sage 300		ARES PRISM G2
WinEstimator		

Pre-Configured Solution

Don’t start from scratch

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ERP Enabled Business Transformation, Accelerated

Deloitte Engineering and Construction SolutionPrintTM for Oracle EBS (DECOS)

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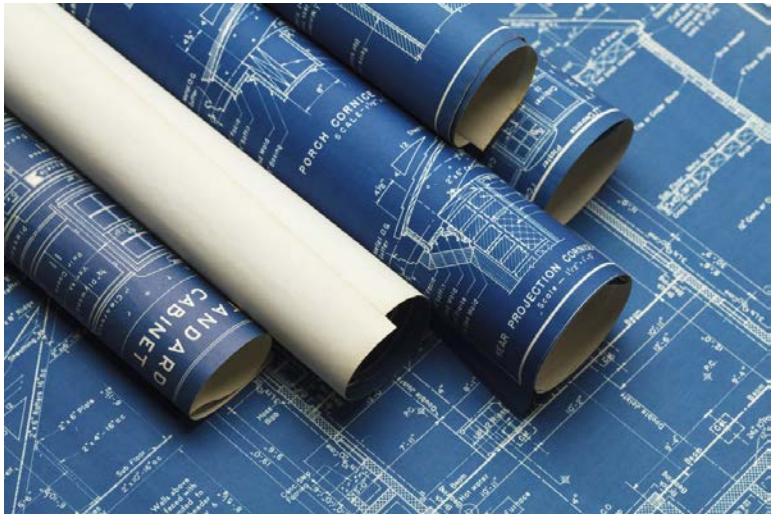


Agenda

The challenges with ERP enabled transformation

Our SolutionPrint™ methodology

Components of DECOS

The DECOS value proposition

ERP enabled business transformation is difficult and has its challenges

Given the complexity, cost, and risks, what executive in their right mind wants to sponsor and undergo an ERP implementation?

Implementations can be expensive, especially when business process decisions are secondary

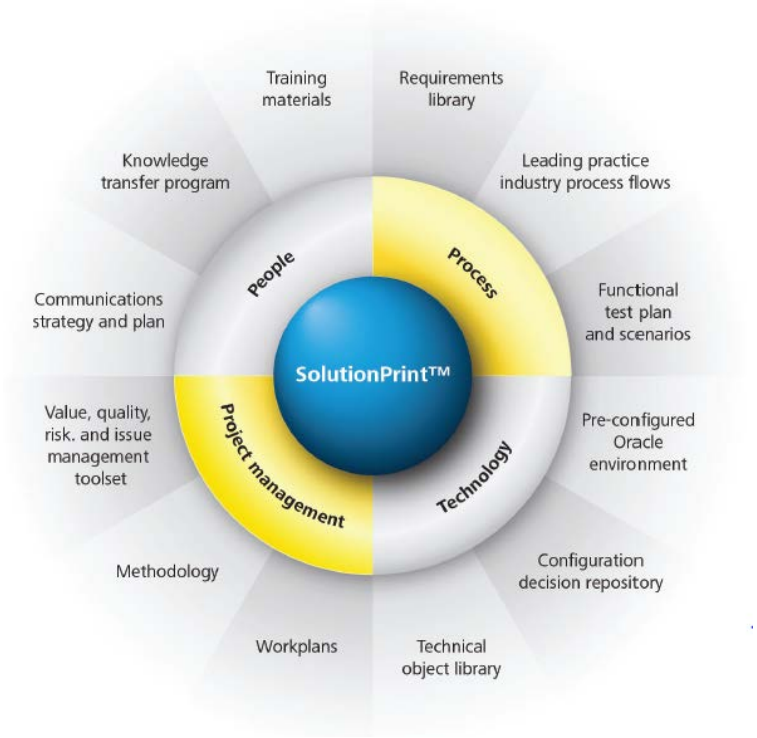
Implementations can be time consuming even when just performing a “package slam”

Implementations can be filled with organizational and individual risk

Implementations that don’t focus on business transformation tend to be a short term fix and add little discernable value

Deloitte addresses these challenges using SolutionPrint™

Our SolutionPrint™ assets and delivery model allow us to accelerate implementations by leveraging our collective industry and Oracle expertise in the form of a pre-built, end-to-end solution



Increased Quality

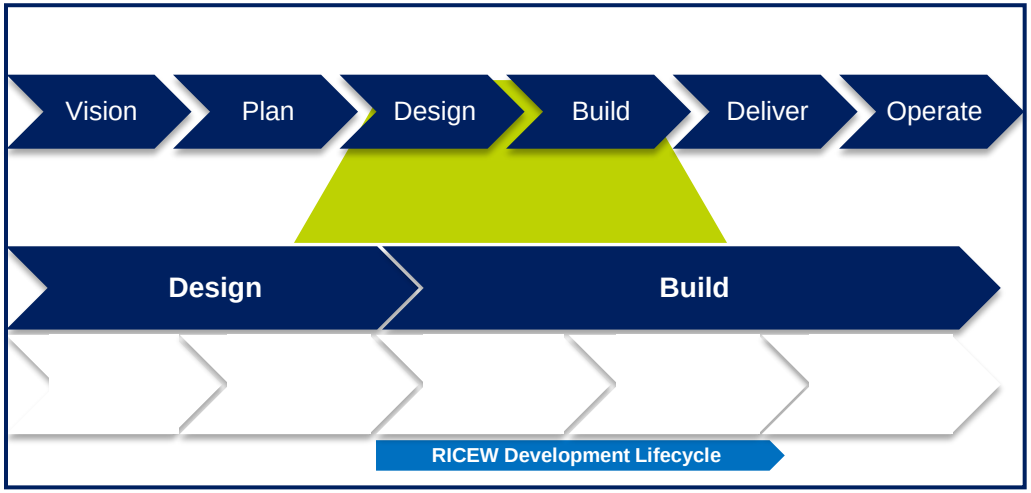
Time to Value

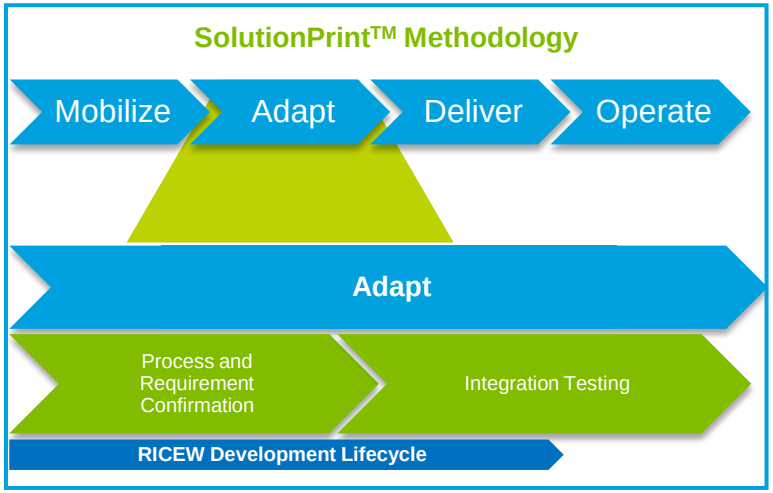
Project Affordability

Reduced Risk

Our SolutionPrint™ delivery model is a departure from the traditional

We compress the traditional SDLC waterfall design and build phases into an “Adapt” phase by employing the concept of “**exception based design**”





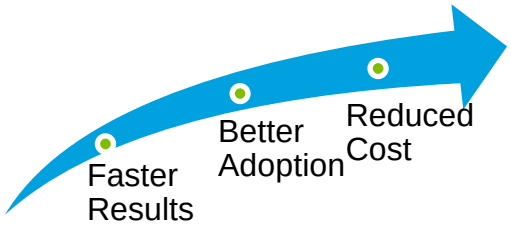
The Deloitte Difference	
• Industry-specific leading processes and practices • Improved decision making by enabling the team to see the actual system early in the engagement • Early identification of design gaps	• Reduced effort in testing and testing material creation • Allows a more agile approach and earlier transition into integration testing • Improved capability transfer to clients due to early system exposure

Accelerated delivery using DECOS

DECOS is built upon our proven engagement experiences and focuses on setting appropriate targets, defining the future business state, and rapidly instantiating it in the ERP system

DECOS Advantages:

- 10+ years history of AEC leading practices and processes
- Demonstrates the software early to users
- Early validation of design decisions and identification of RICEW (customizations)



- 130 **process flows** encompassing Human Capital, Project Accounting, Financial Reporting, and Procurement
- ~2,900 **requirements** organized by process
- ~4,000+ line project plan
- 24 key module **configurations**
- ~800 **test scripts**
- 30 **KPIs**
- 35 key **conversion** templates

DECOS comes pre-packaged with key deliverables

With many deliverables in place before the engagement even starts, we are able to immediately focus on requirements unique to your company and quickly move into testing and deployment

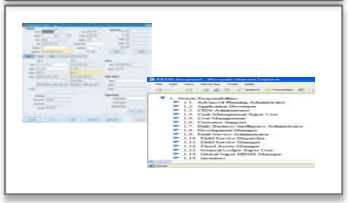
Methodology

Project Management

IndustryPrint™

Deployment

Pre-Configured ERP

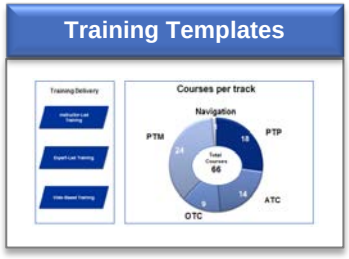


Testing Content

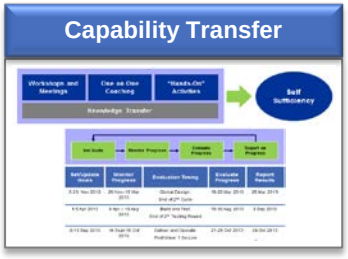
Technical Objects

Technical Standards

Training Templates



Capability Transfer



Deloitte has changed the ERP game in Engineering and Construction

Our collective understanding of leading practices in engineering and construction, our DECOS asset, our methodology, and most importantly our experience, differentiate Deloitte

We are able to reduce typical implementation costs by up to 40% using our SolutionPrint™ assets

We reduce implementation timelines by leveraging our assets to accelerate design and move quickly into integration testing

We manage and mitigate risk by employing a rigorous and proven methodology supported by pre-existing assets and deliverables

We ensure that you get value out of your implementation by leading with the business in mind and supporting their needs through technology to accomplish a long term solution

Mobility in E&C Industry

Mobility Survey Results and Polling Questions

Technology Solutions Today: Mobility

What are the Trends

- 93% of GC and Subs using mobile devices
- Tablets eclipsing phones as the device of choice
- Trending Apple vs. other platforms
- Geo-fence

Capabilities to Look For

- Data security, company policy, and safety
- Multi-platform capability
- Off-line capability

What Defines Success?

- Shorten communication cycles
- Improved productivity
- Decentralized data entry and management

Shortlist for E&C

- Some of the “Big Guys”
- All the “Little Guys”

About the survey

The insights used in this presentation are based on an executive survey conducted by The Marketing Audit on behalf of the Deloitte Center for Financial Services. The survey was conducted between mid-March and late-May this year and polled executives of 45 engineering and construction companies (E&C) companies.

The survey aimed to understand their mobility usage patterns, with a focus on its strategic importance, current and future usage, benefits, and adoption challenges.

Of the sample of 45 respondents, 51 percent of the respondent executives were from small-sized companies (annual revenue of $250 million to less than $500 million), 22 percent were from mid-sized companies (annual revenue of $500 million to less than $1 billion), and 27 percent were from large-sized companies (annual revenue of $1 billion or more).

Poll question #1

What importance does mobility hold in your company’s technology strategy? Rate on a scale of 1-5. One being least important and 5 being the most important.

- 1
- 2
- 3
- 4
- 5

Mobility is strategically important to E&C Companies

Strategic importance

67 percent

respondent companies believe that mobility is an important or most important part of their technology strategy

Investment

44 percent

respondent companies spend 1-5 percent of their technology budget on mobility

C-suite focus

73 percent

respondent companies have director or above responsible for implementation of mobile strategy

Advanced Technologies

49 percent

respondent companies use or plan to use IoT (Internet of things) and 28 percent use or plan to use augmented reality via mobile devices over the next two years

Productivity benefits

96 percent

respondent companies identify greater productivity as a key benefit of mobility, followed by data timeliness (84 percent) and employee satisfaction (69 percent)

Robust usage

100 percent

respondent companies use smartphone, tablet or both for work related activities

DCFS

Poll question #2

What tasks do your employees perform with their mobile devices in functions such as field data collection and project management? Select all that apply.

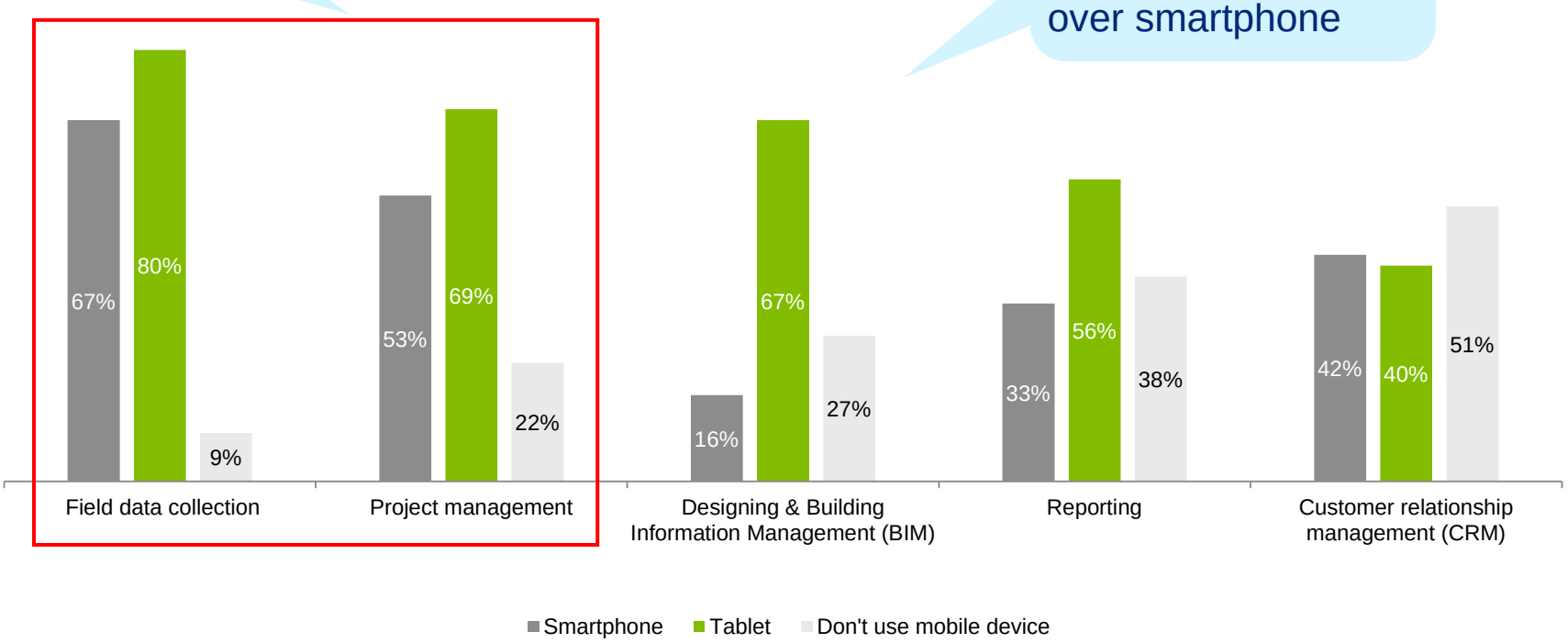
- Access information onsite
- Exchange information internally
- Exchange information externally
- Review & edit documents
- Track progress

Mobility is used across key functions at E&C companies

Mobility device usage across different E&C functions

Field data collection and project management use mobility most extensively across different functions at respondent companies

Most E&C functions at respondent companies prefer to use tablet over smartphone



DCFS

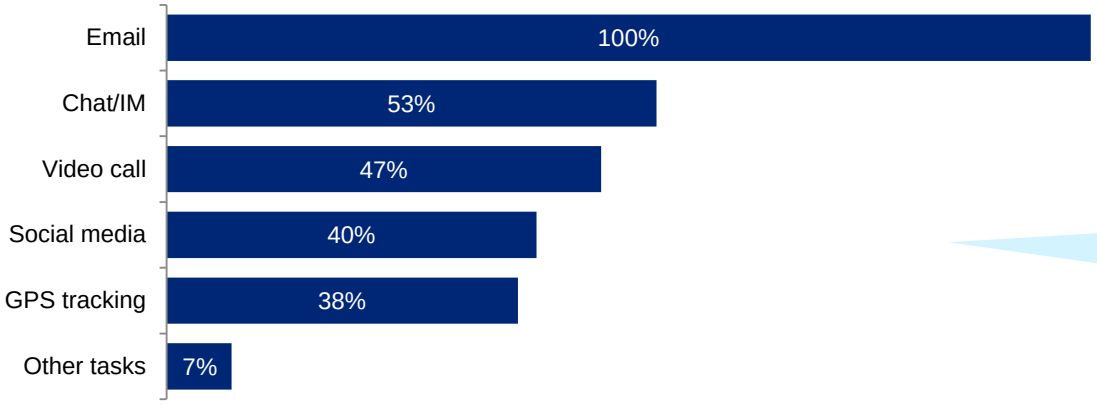
Poll question #3

Which mobile features do your employees use in functions such as field data collection and project management? Select all that apply.

- Email
- Chat/IM
- Video call
- Social media
- GPS tracking

However, E&C companies use mobility primarily for elementary tasks and activities

Primary mobile features used by respondent companies



Majority of respondent companies use basic features such as email and chat/IM on mobile devices rather than advanced features such as GPS tracking.

In field data collection, 78 percent and 73 percent respondent companies use tablets and smartphones for inspections, respectively. However, the tablet and smartphone penetration for collecting data on production quantities, is only 22 percent and 17 percent, respectively.

In project management, 66 percent and 37 percent respondent companies use tablets and smartphones for maintaining daily logs, respectively. However, the tablet and smartphone penetration for activities such as purchasing, is only 20 percent and 11 percent, respectively.

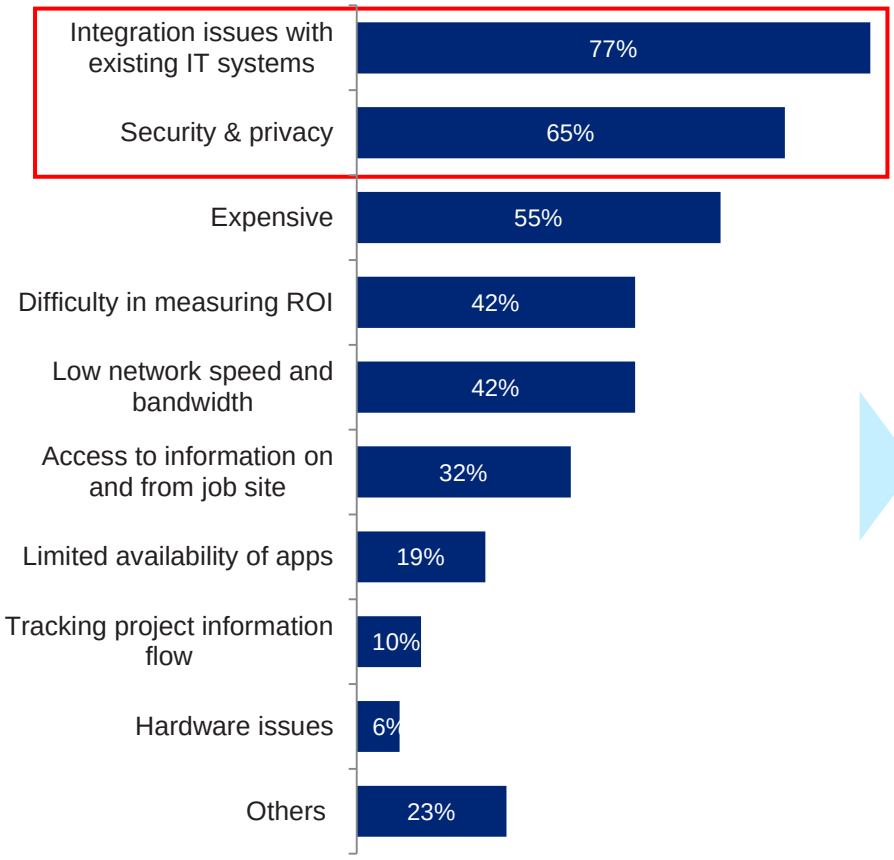
Poll question #4

What are the challenges that currently limit your company's mobility adoption? Select all that apply.

- Expensive
- Integration issues with existing IT systems
- Security & privacy
- Low network speed and bandwidth
- Access to information on and from job site
- Limited availability of apps
- Hardware issues
- Difficulty in measuring ROI
- Tracking project information flow

Integration and security and privacy are the biggest challenges limiting mobility adoption at E&C companies

Adoption challenges



Potential solutions

Potential solutions for integration issues

- **63 percent*** respondent companies consider application programming interface (API) strategies that include building and buying applications to access legacy systems can facilitate better integration and compliment mobility strategy
- **63 percent*** respondent companies believe that adopting solutions that provide a common platform to integrate and manage different mobile devices can help address integration challenges

Potential solutions for security and privacy risks

- **85 percent^** respondent companies believe that automatic disablement of a stolen mobile device can help reduce security and privacy risks
- **80 percent^** respondent companies believe that using only company-owned and approved mobile devices can mitigate some of the security and privacy risks

* Out of respondent companies who have integration issues
^ Out of respondent companies who face security and privacy risks

Follow-up

- The complete mobility results should be available to the conference participants in about 6 weeks.

Using Mobility
Production Quantities

Technology Solutions Today: Equipment Big Data

What are the Trends

- Equipment telematics
- Use of Tablets in the field
- “Yard Club” Caterpillar connects contractors to idle equipment

Capabilities to Look For

- Statistical modeling
- Handle huge amounts of data
- Leverage information around cost codes and change orders
- Automate hours and location tracking
- Predictive Analytics

What Defines Success?

- Ability to overcome “insufficient detail”
- From Reactive to Predictive maintenance
- Capture data to reduce breakdowns
- Getting away from MS Excel

Shortlist for E&C

- Acumen 360
- Primavera Risk Analysis
- Vico Software
- Zonar
- Uptake (Caterpillar Inc.)

Selection Strategies

Project Management Solution Selection Approach

The selection of the most appropriate PM tool is done by analyzing the marketplace for all available construction tools for mid-size companies, crafting a shortlist, and quantitatively grading each solution against a pre-set criteria.

Stage 1: Identify Relevant Solutions

Assess the market of PM solutions for relevance:

- Solutions relevant for Engineering and Construction
- Serving Mid-sized GC organizations

Stage 2: Additional Filtration for Shortlist

Apply additional filters to develop the shortlist :

- **Industry Focus**
  - Engineering and Construction
  - GC-focused PM tools
- **Vendor Position**
  - Market
  - Financial
  - R&D Investment
- **Solution Position**
  - Scalability
  - Install base
  - Complexity

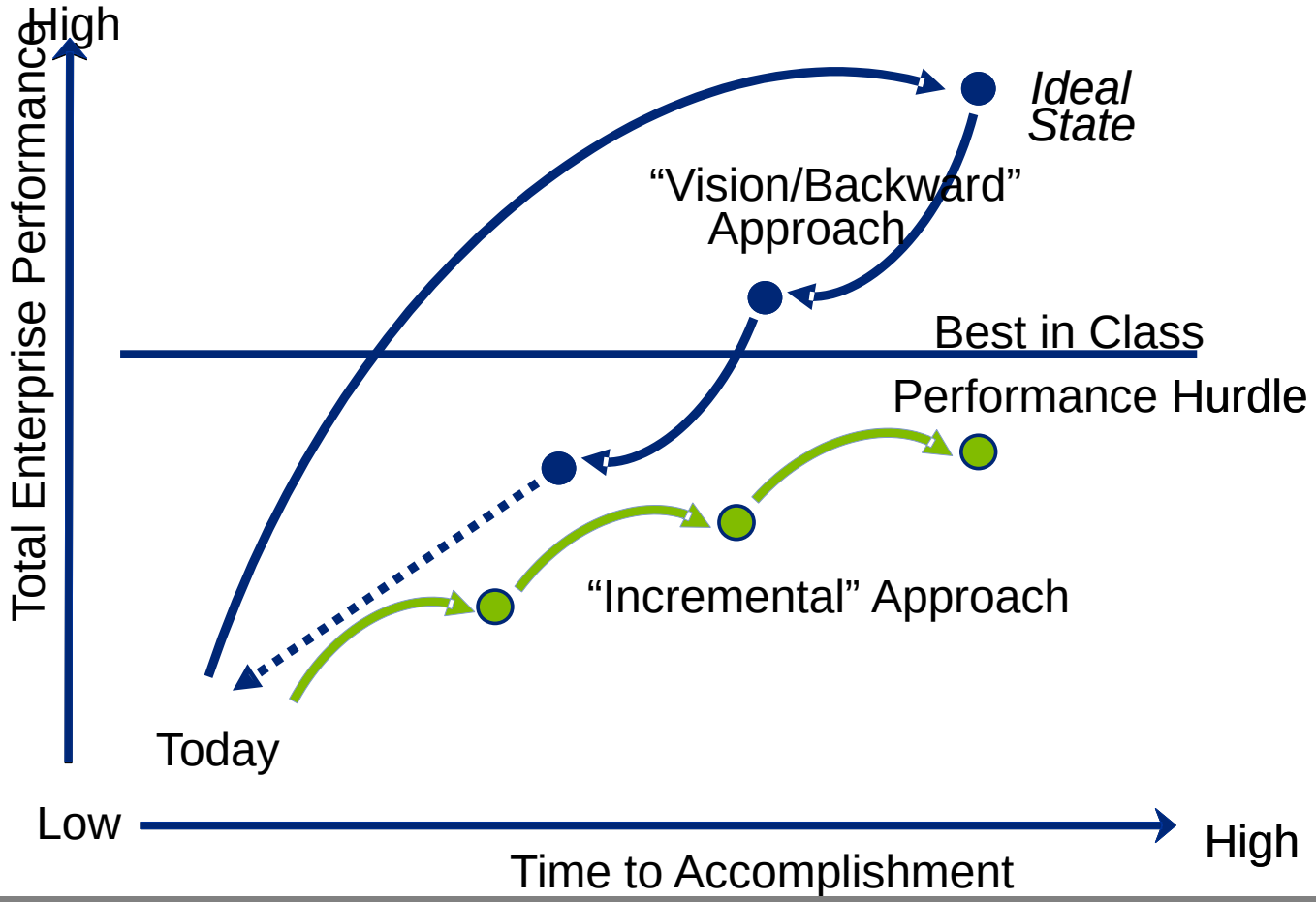
Stage 3: Conduct Additional Analysis

Evaluate the shortlisted solutions further based on:

- Support of signature processes
- Coverage of functional requirements
- Technology Platform
- References
- Costs, Terms & Conditions

Future Application Investment Planning

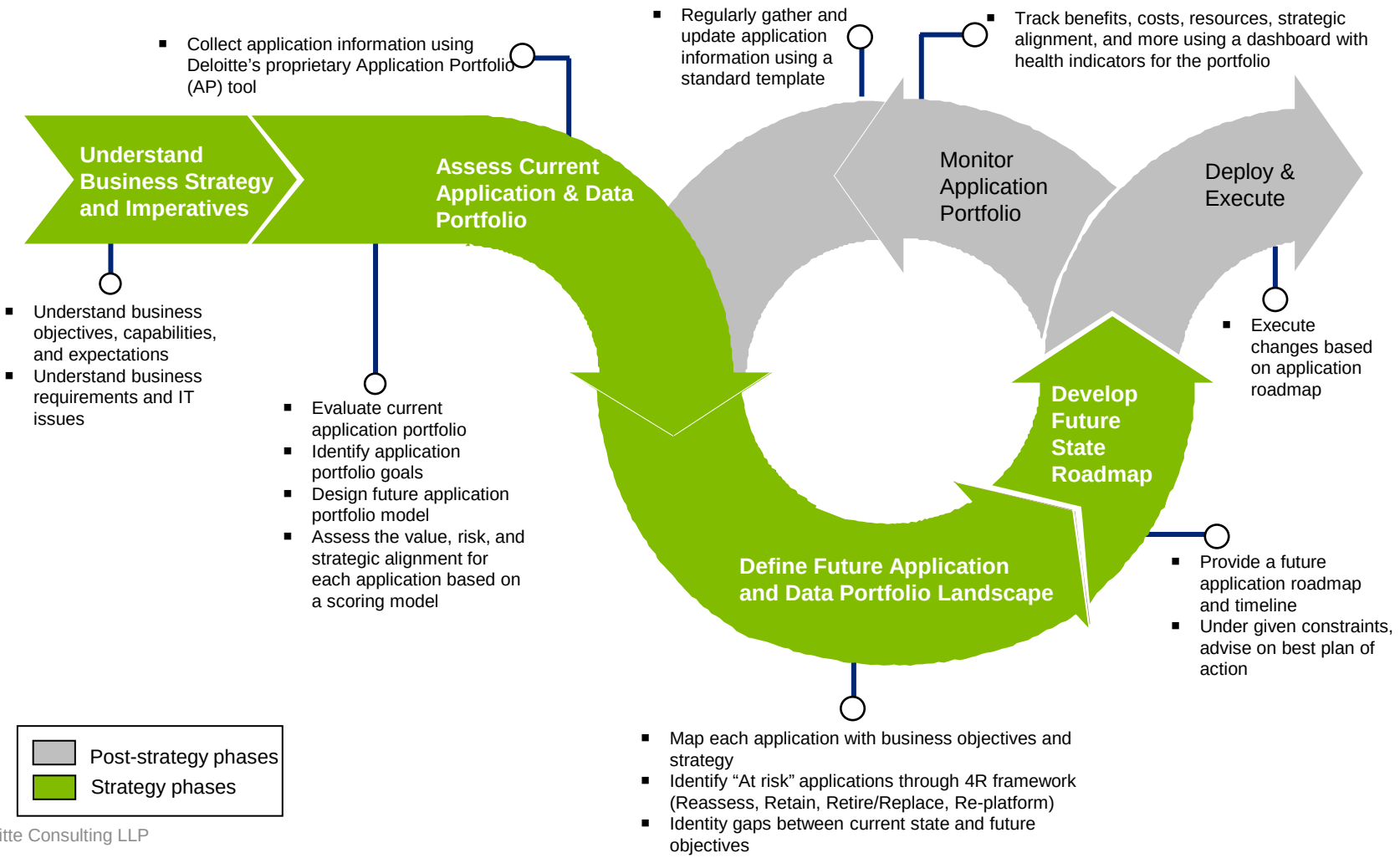
A Future State Model is a customer-centric, results-oriented roadmap that defines how to get to a whole new level of performance that enables strategic corporate goals by focusing on core competencies to drive significant improvement.



An "ideal" Future Model is one that first defines the end goal (where we want to be) and then provides the details (transient stages) and associated roadmap on how to get there.

Simplify the existing application portfolio.

Business benefit can be realized when building a tools and data rationalization roadmap. This process can better define tools and data alignment to business processes. Application and data redundancy and duplication can be identified and corrected.



Implementation Strategies

Implementation Strategies

Follow a project charter and use it every day.

Control project scope

Identify Key Design Decisions early

Use a pre-configured solution as a base

Project Scope Definition

Identifying and Managing project scope is the basis to a successful ERP implementation

Define Business Process and Sub-Process

Define Modules (General Ledger, Project Costing, Procurement)

Define Key Design Decisions (KDD)

Define Functionality (Multi-Currency, Revenue Recognition, Blanket Orders)

Document Integrations to Supporting Systems (Estimating, Scheduling)

Identify and Agree on Requirements

Identify and Agree on Software and Business Gaps

Identify and Agree to Scope

Key Design Decisions (KDD)

A Key Design Decision is a business topic that needs further clarification early in the project lifecycle as it typically affects configuration, testing and output.

The earlier you can identify KDDs and come to an understanding in the business on how they will be handled, the easier it will be to:

1. Sell the project to stakeholders
2. Train end users on business process impact
3. Test for expected outcome

Deloitte has developed over 70 White Papers on Key Design Decisions you will see during your system implementation. The White Papers explain the issue and opportunity, present Pros and Cons, and recommends a solution based on industry best practices.

Typical Construction Key Design Decisions

Understanding what makes your company unique will allow KDD to guide your project success.

Project Costing

- "Smart" Project Numbering
- Standardize Work Breakdown Structure
- Convert Job Data
- Use of Revenue Recognition
- Internal Billing
- Contingency Basis and Visibility
- Locking Original Budget
- Determine the Use Reporting Categories (MDM)
- Warranty Cost Tracking
- Tax Rules & Automation
- Change Request, PCR, and Change Order Management

Equipment

- Definition of Equipment vs. Tools
- Equipment Utilization, Rates, Sharing & Charging
- Equipment Rentals
- Unit Numbers vs. Asset Numbers

Finance

- Burdens and Indirect Cost Allocation
- Standard Resource Rates
- Balance Sheet vs. Income Statement
- Company, Project, Job Relationships
- Inter-Company

Typical Construction Key Design Decisions

Distribution

- Use of Purchase Orders & Sub-contracts
- Vendor On-Boarding Process
- Management of Vendor Master
- P-Card Purchasing Standardization
- Shared Services Concept
- Standardization of Item Master

Systems

- Security - Open or Closed System
- Access to Legacy Systems

Human Resources

- Standard Job Titles
- Standard Pay Cycles/Work Week

Q&A

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