



A Blockchain Use Case

The D_Marketplace

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Agenda

20 Min



1. Motivation & Use Case Introduction
2. UI / UX
3. Blockchain Benefits & Concerns
4. Solution Architecture Design
5. Technology Stack
6. Hyperledger Fabric Challenges
7. Q&A



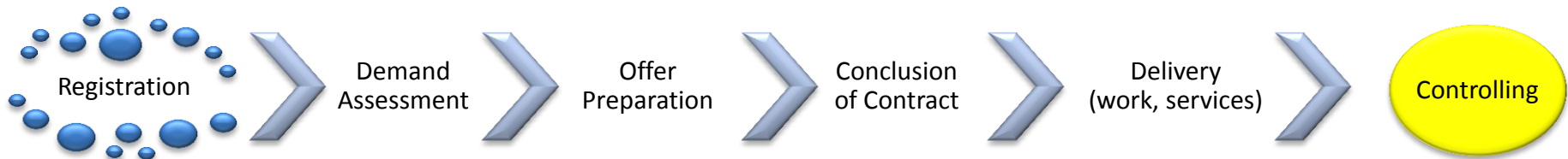
Dr. Michael Kuperberg
Lead Blockchain Architect at Deutsche Bahn



Bertalan Vecsei
External Blockchain Architect at Deutsche Bahn

1. Motivation & Use Case Introduction

- Service procurement within an existing commercial relationship, for pay-as-you-go and fixed-scope services



- **Streamlining the process – disruptive if beneficial**
- End-user first: satisfaction in browser, on mobile devices, in Windows 10 apps
- Standardization, eliminating legacy dependencies and interfaces
- **Trustworthy** contract lifecycle and replicated storage; automation
- Transparency, auditability, improvement of *business performance*
- **Blockchain for trust, out-of-the-box security:**
non-repudiation, tampering protection, etc.
- Marketplace approach and a „platform“ with high reuse potential
- Initial release: two *internal* business units (ca. 15 users), simple onboarding
- Vision: Blockchain Smart Contracts to trigger payments once these are due

2. UI / UX (Early Examples)

Vorgänge

Josephine Pearson

Search project

Export Overview as PDF

Status	Name	Rolle	Vorgangsnr.	Budget	Vertrags-Partner	Stand
overdue	Project Alpha	Bedarfsträger	231412	400k	DB Fantasy GmbH	-
wartet	Beam me up	Bedarfsträger	123412	1500k	DB Energie GmbH	-
Angebot liegt vor	Materium Imperium	Bedarfsträger	32455243	1745k	DB Vertrieb GmbH	-
in progress	Beyond beyoncé	Bedarfsträger	12344321	300k	DB Fernverkehr AG	55%
in progress	Zero Zero	Bedarfsträger	12341324	20k	DB Regio AG	36%
in progress	Liberty beyoncé	Unterzeichner	24134312	14k	DB Regio AG	55%

+ Neuen Bedarf erstellen



Backend Development

Process-ID: 2342 1234 1

Verhandlung

Report



Angebot



Vincent Jefferson 12. Jul 2017 - 12:46

For business professionals caught between high OEM price and mediocre print and graphic output, there's a solution: Business Express's Eclipse line of compatible laser toner cartridges that meet or exceed OEM quality for 20% less than typical OEM price. While even brand name OEMs display "This cartridge may contain recycled components" on packaging.

Preis 25Pt
Dauer 18 Wochen
Verfügbarkeit KW 21 / 2PT p.W

Documents

Angebot.pdf

Historie



Bedarf



Josephine Pearson 11. Jul 2017 - 14:28:09

For business professionals caught between high OEM price and mediocre print and graphic output, there's a solution: Business Express's Eclipse line of compatible laser toner cartridges that meet or exceed OEM quality for 20% less than typical OEM price. While even brand name OEMs display "This cartridge may contain recycled components" on packaging.

Budget 50k
Deadline 31. Dez. 2017
Priority medium

Documents

170415_Backend_Requirements... .pdf

Historie



Backend Development

Process-ID: 2342 1234 1

Verhandlung

Report



Quick - Briefing:

You might be used to pulling up a chair to your computer, but it makes much more sense to pull your computer up to your chair. You might be used to pulling up a chair to your computer, but it makes much more sense.

Budget: 50k
Deadline: 31. Dez. 2017
Priority: medium

Project Progress



Projekt Status



Time to Budget

Bilanz

Ausgaben: 1.2k
Balance: +12%



Export Full Report as PDF



Contact Project Responsables



Project Change



Export Full Report as CSV



Input Data



Bedarf übermittelt
Process-ID: 2342 1234 1

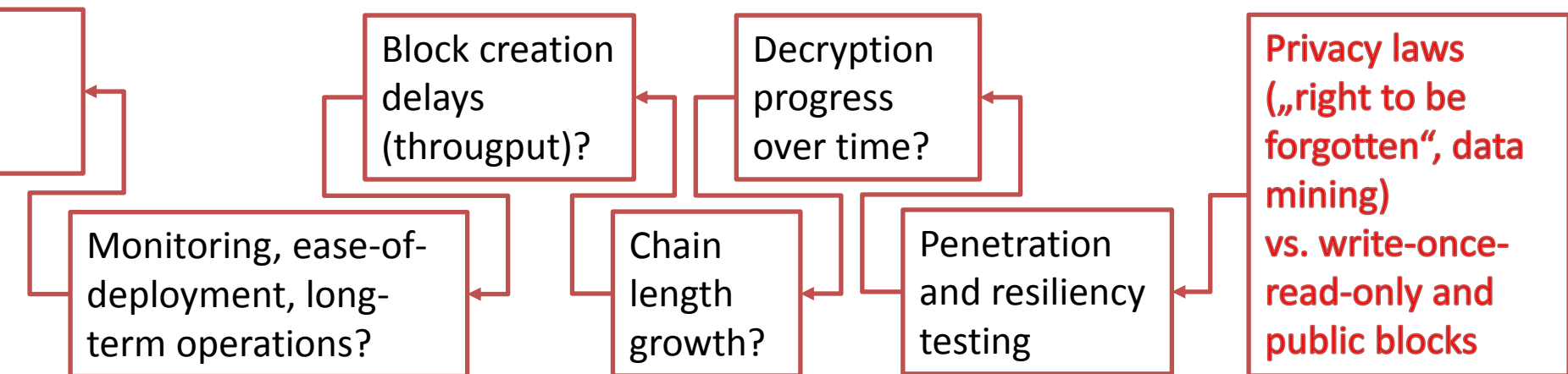
Continue

3. Blockchain Benefits & Concerns

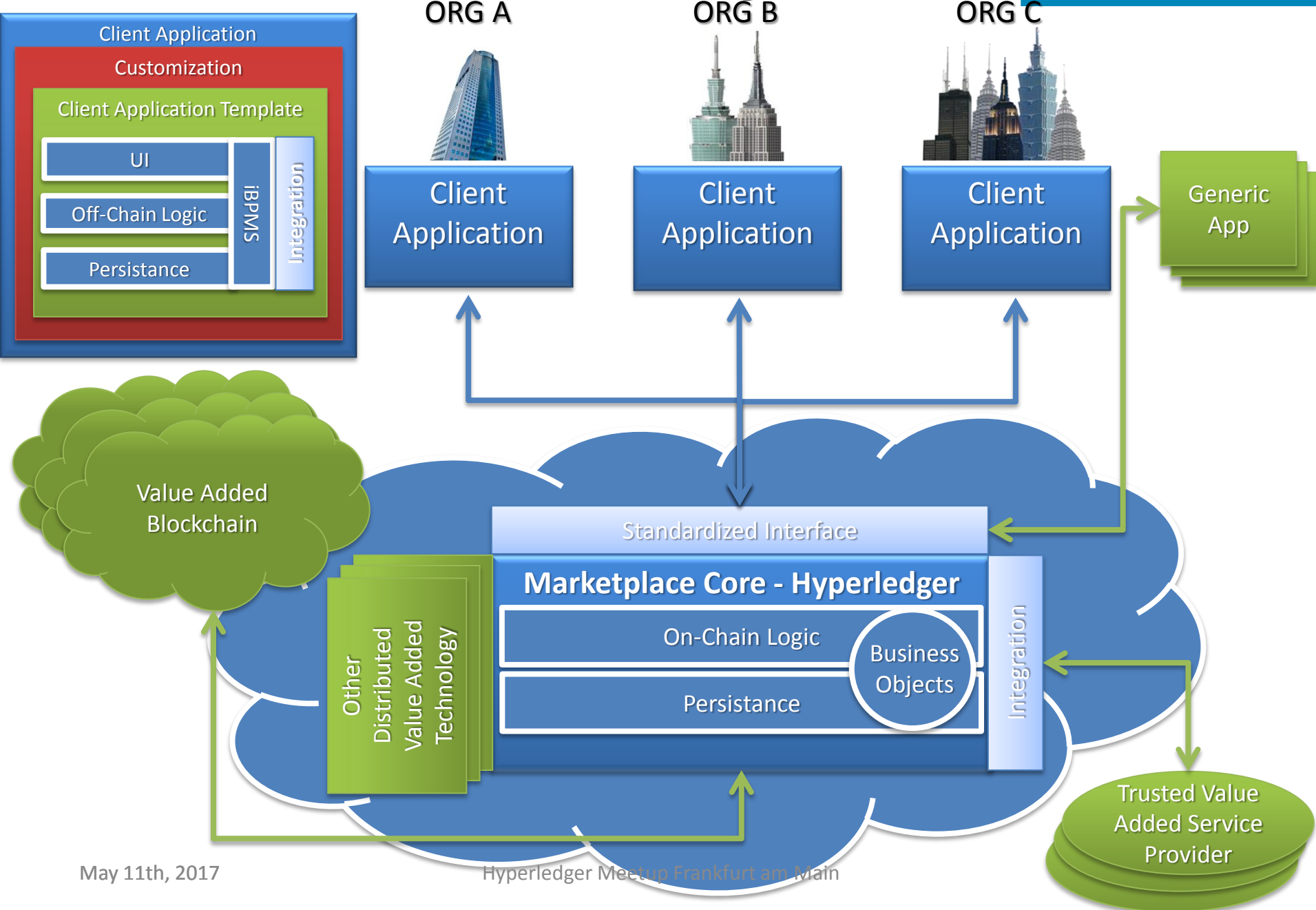
- Replication, cryptography out-of-the-box – but without guarantees! Efficiency, speed?
- Initially „Swedish tax records“ approach to privacy, unlike in traditional integration tools
- Early/hyped technology: cryptoassets (Bitcoin, ...) are the major public application → project risk, moving target
- Integration into orchestrators and of third-party systems: major challenge (cf. self-scheduling, endorsement, transactions/rollbacks, interfaces)



Image source: <http://fusion.kinja.com>



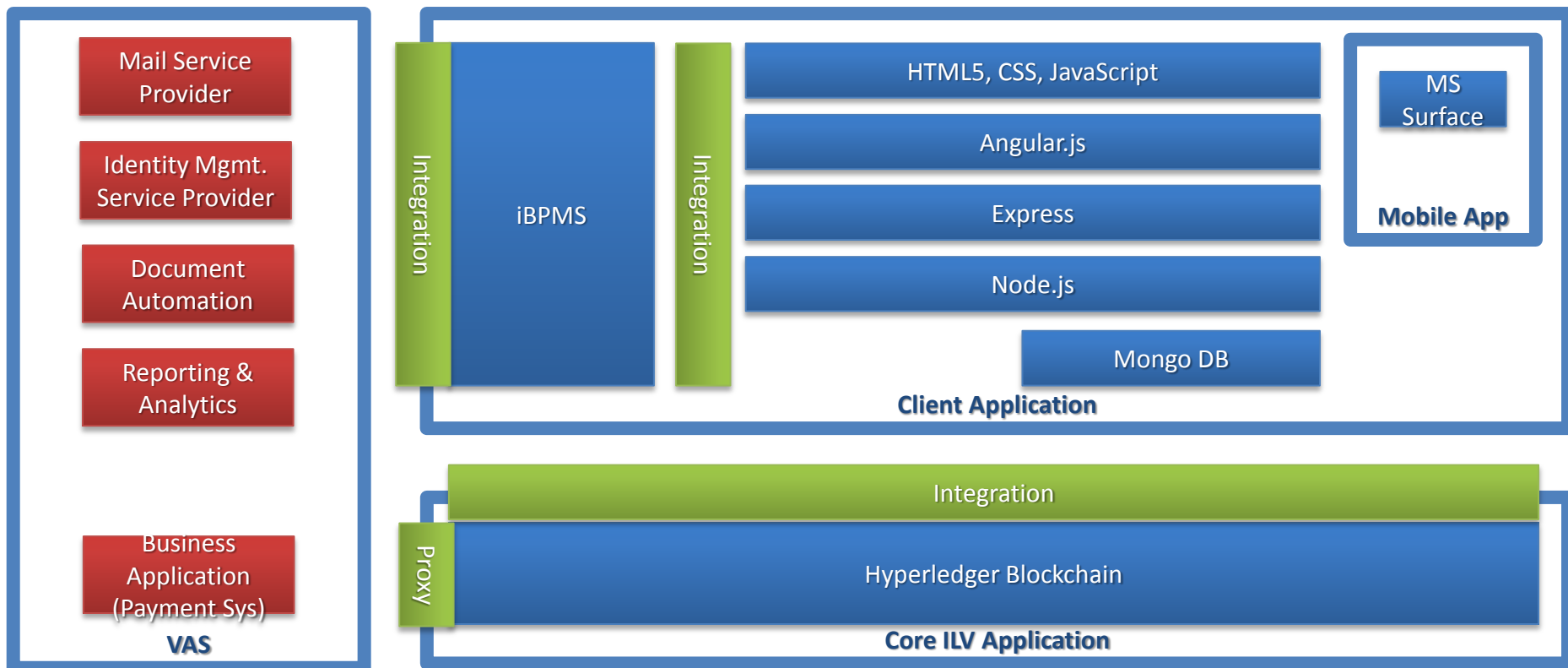
4. Solution Architecture Design



5. Technology Stack

- Amazon EC2 Cloud
- **Hyperledger Blockchain** (Docker, Java chain code, Node.js SDK, Node.js MarketPlace App Interface)
- Standard **MEAN Web App** Framework (Mongo, Express, Angular.js, Node.js)
- **Web Technologies** (HTML5, CSS, etc.) & Frameworks (Bootstrap, SASS, jQuery, etc.) & UX Design (Sketch)
- Stateful Process Orchestration & Workflow Component (**iBPMS**)
- Integration via Event Driven & Service Oriented **Middleware** Technologies (REST, Swagger, ActiveMQ, JBoss MW, etc.)
- **Document Automation** (XSL-FO, Apache FOP, etc.)
- **Legacy** Application Technologies
- **Microsoft Surface** (C++ / C# / Microsoft Visual Basic / JavaScript & HTML5)

Note: NO Hyperledger Composer FW at this stage (wait until Fabric has an official Release on v1 and Composer catches up).



6. Hyperledger Fabric Challenges



DB &
Procedures

Hype



IBM

„Cool“
Capabilities

Plug & Play

Open Source

Integration

Interface
(Lib vs. Service)

Fabric
Capabilities &
Stability

Content Objects

Infrastructure

OffChain vs.
OnChain Logic

???

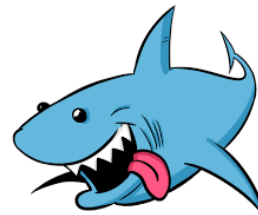
Know-how

Security
(Privacy)

Identity
Management

Consensus &
Concurrency

Right To Be
Forgotten



Performance

Chaincode
Lifecycle Mgmt.

Migration,
Replay

THANK YOU



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