

The background image shows a port scene with large metal chains hanging from a crane. In the background, several workers wearing yellow hard hats and orange safety vests are standing on a wet, reflective surface. The scene is industrial and suggests a maritime or shipping environment.

航运业数字化转型与新技术展望

Shipping Digitalization and New Technology Outlook

Maritime Silk Road Port - International Cooperation Forum

2018-06-14 Ningbo

DNV GL Overview and Vision 愿景: 引领全球, 开创安全、可持续发展的未来



150+
年

100+
国家

12,500
员工

DNV GL Global Organization - 独立、自主及以行业为中心的组织架构



数字 Some Facts

DNV·GL



100,000+

客户

12,160 艘

入级的船舶与移动式海
工平台，2.8亿总吨
(2018年1月)

80,000张

管理体系 (ISO 9001、
ISO14001、
OHSAS18001等) 证书，
获得80多个认可

6,000家

食品饮料公司与我们建立
起合作关系，以便实现安
全和可持续发展的目标

65%

海底管道的设计与安装采
用DNV GL标准

14

大功率、高电压测试能
力位居世界首位

分布在三个国家的实验
室和检测中心

2,400家

医疗组织相信我们能够帮
助它们提高医疗质量、改
善患者安全

19,475

2017年收入 (百万挪威克朗)

5%

年收入用于科研和创新

Strategic Research and Innovation Projects 战略研究与创新项目



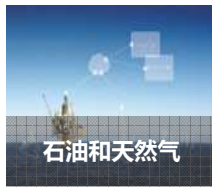
海事

- 数字化入级
- 无人船舶
- 安全和可持续运输



数字化保障

- 复杂信息物理系统认证
- 新兴的数字技术



石油和天然气

- 以模型为中心的风险管理
- 系统资格认证
- 新能源价值链



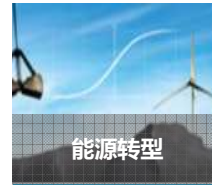
气候行动

- 负排放技术（正在筹备中）



电力和可再生能源

- 可再生能源
- 电网转型
- 能源控制论



能源转型

- 能源转型建模与分析



生命科学

- 精准医疗



海洋空间

- 水产养殖

Future Outlook Publications by DNV GL 我们的前瞻出版物



2017

行业展望– 石油和天然气行业基准报告



2020

全球机遇报告– 指引您寻找机会的GPS



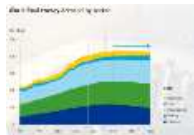
2025

技术展望– 未来十年的技术格局



2030

太空船地球的未来– 我们星球的压力测试



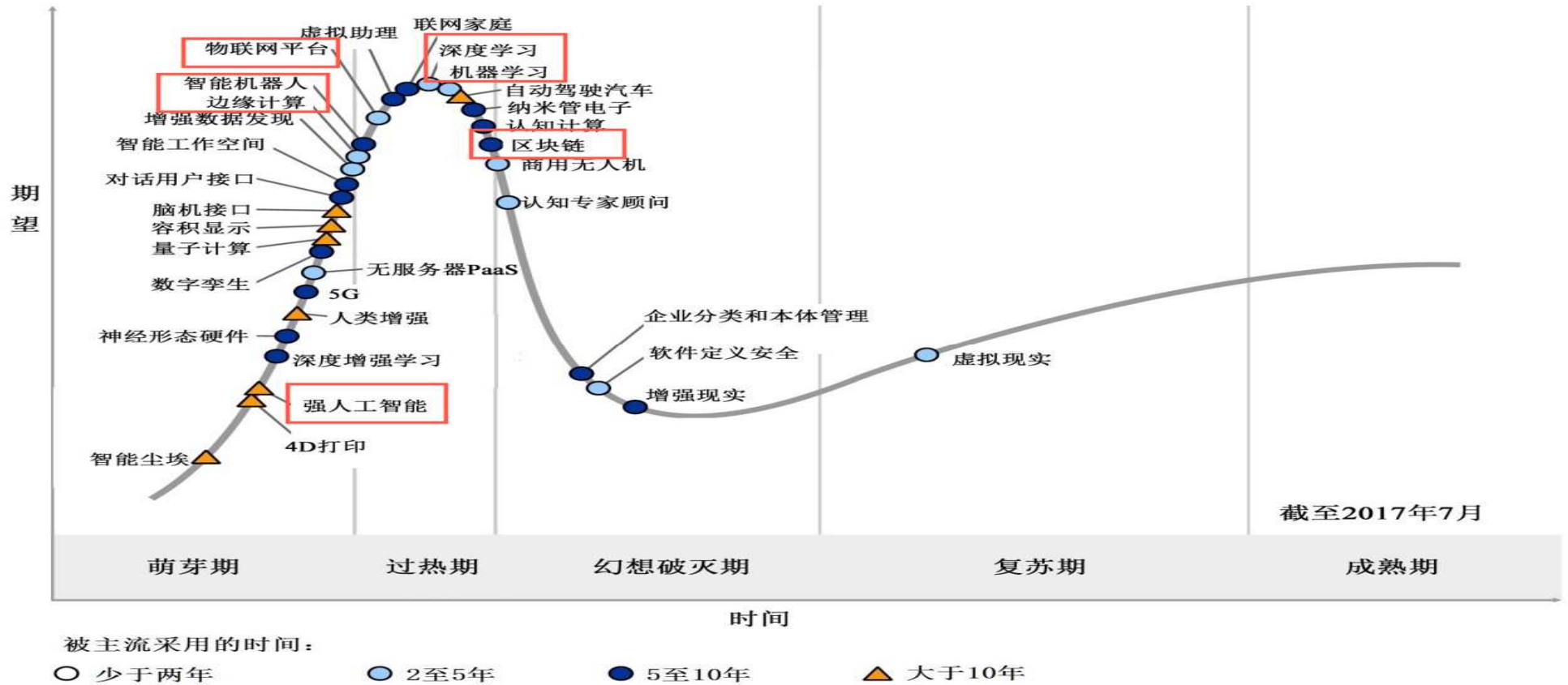
2050

能源转型展望– 能源需求和供给的独立预测

技术改变世界 Technology Changing the World

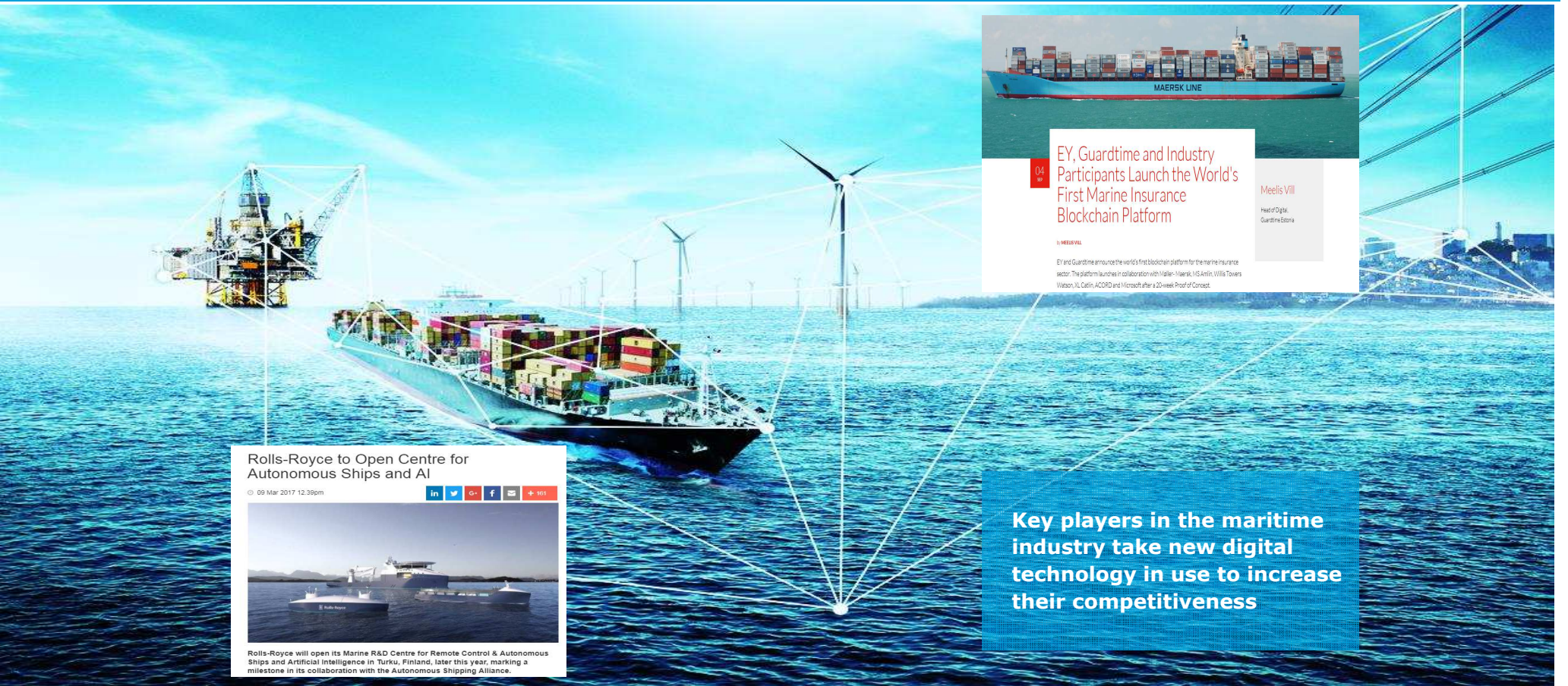


Gartner Hype Cycle 高德纳新兴技术成熟度曲线 2017



海事业数字化转型

Digitalization opens up for new ways of doing business



Rolls-Royce to Open Centre for Autonomous Ships and AI

© 09 Mar 2017 12:39pm

[in](#) [t](#) [G+](#) [f](#) [e](#) [+](#) 961



Rolls-Royce will open its Marine R&D Centre for Remote Control & Autonomous Ships and Artificial Intelligence in Turku, Finland, later this year, marking a milestone in its collaboration with the Autonomous Shipping Alliance.



04 EY, Guardtime and Industry Participants Launch the World's First Marine Insurance Blockchain Platform

by MEELIS VILL

Meelis Vill
Head of Digital, Guardtime Estonia

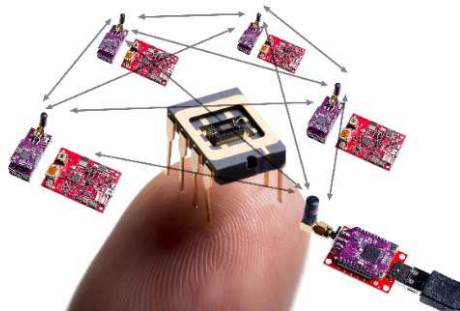
EY and Guardtime announce the world's first blockchain platform for the marine insurance sector. The platform launches in collaboration with Maersk, Maersk, NIS Amfin, Willis Towers Watson, XL, Coface, AIGARD and Microsoft after a 20-week Proof of Concept.

Key players in the maritime industry take new digital technology in use to increase their competitiveness

影响航运未来的技术 Technologies that will impact shipping

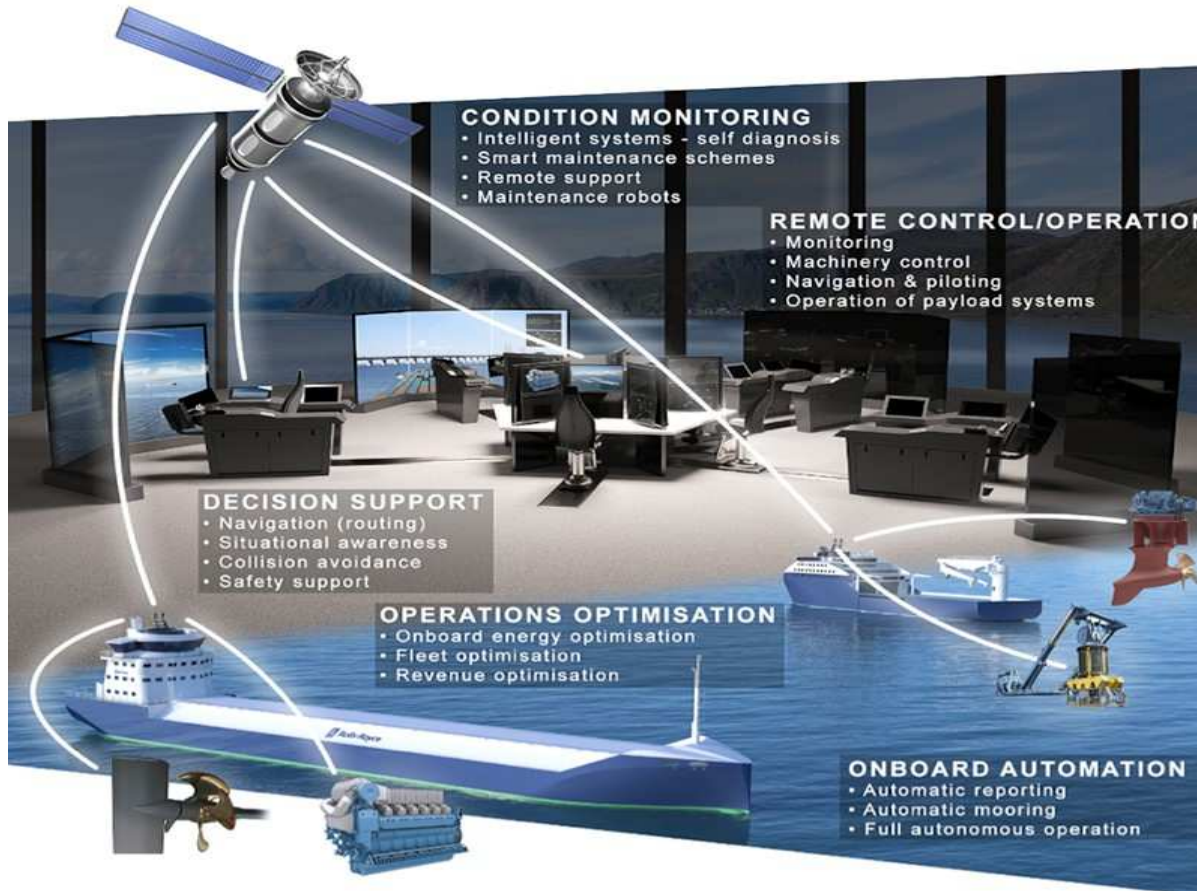


传感器和物联网 Sensors and Internet of Things (IoT)



IoT Smart Sensors
Moving from time-based to condition-based maintenance

船岸通信技术 Improved Connectivity



智能移动设备 Smart Handheld Devices



Digital wearables for crew



Enhancing passenger experience

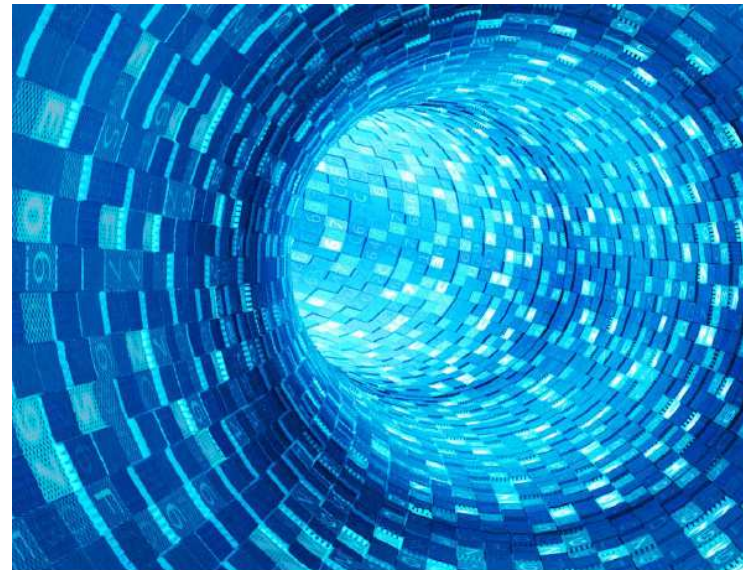


A normal smart-phone contains 14 sensors

大数据与机器学习 Big Data & Analytics (machine learning)

Four main drivers for use of big data in shipping:

- Availability of affordable, reliable and accurate sensors
- Improved connectivity speeds between ship and shore
- increasing computational power + the development of IT platform to match different data sets (platforms)
- development of analytical methods and algorithms for creating value from and insights into the data collected (e.g. machine learning)



大数据质量 With big data, comes big data quality issues



云和数字平台 The Cloud and the Platform



- IT cost savings
- Superior cyber security protection
- Easy access to advanced analytic tools
- Manufacturers are starting to offer cloud-based services
- many set-ups will be hybrid versions between cloud and on-premise solutions.



区块链技术是什么？What is Blockchain



- 带有**时间戳**且不可篡改的数据块组成的链条（数据库）
 - 实时同步的**分布式**系统
 - 非对称**加密技术**以及数据库技术等多种现有技术综合而成的商业生态拓展技术
- 基于数据加密技术，时间戳，分布式共识，激励机制的**去中心化**的工具

行业内首个区块链认证证书 A first in the industry



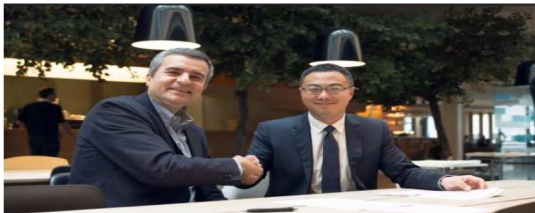
BLOCKCHAIN
 Single source of truth





DNV GL入股VeChain， 加强对数字化解决方案的 承诺

DNV GL入股全球领先的区块链科技公司VeChain，以此加强通过数字化解决方案提高信任和透明度的承诺。



连锁零售冷链可追溯系统及 DNV GL第三方符合性声明



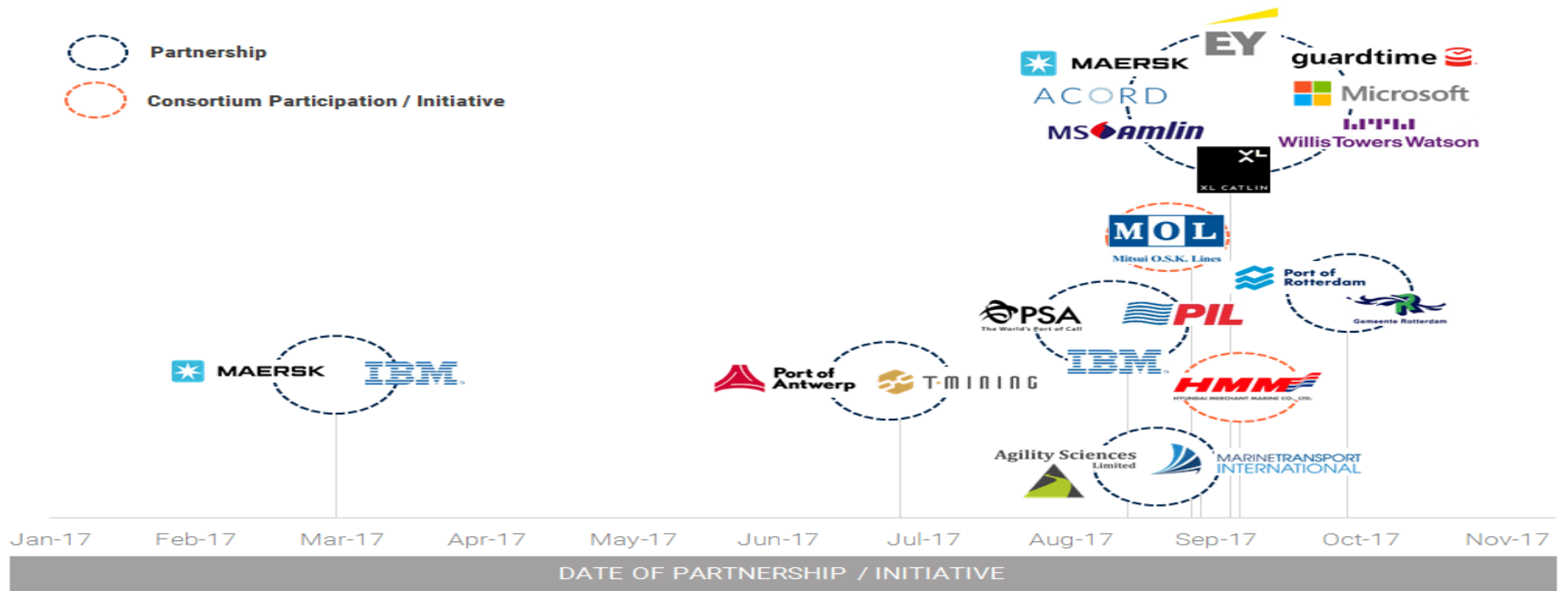
某知名连锁便利店零售企业每日销售鲜食商品的保质期为36小时，严控生产、储运和贩卖全程冷链的环境及设备温度，对鲜食保质期起决定性作用。

区块链海事行业应用举例 Blockchain in Shipping – Pilot Cases

Maritime Logistics + Blockchain Timeline

Select 2017 Blockchain Partnerships and Initiatives in the Maritime Logistics Space

-  Partnership
-  Consortium Participation / Initiative



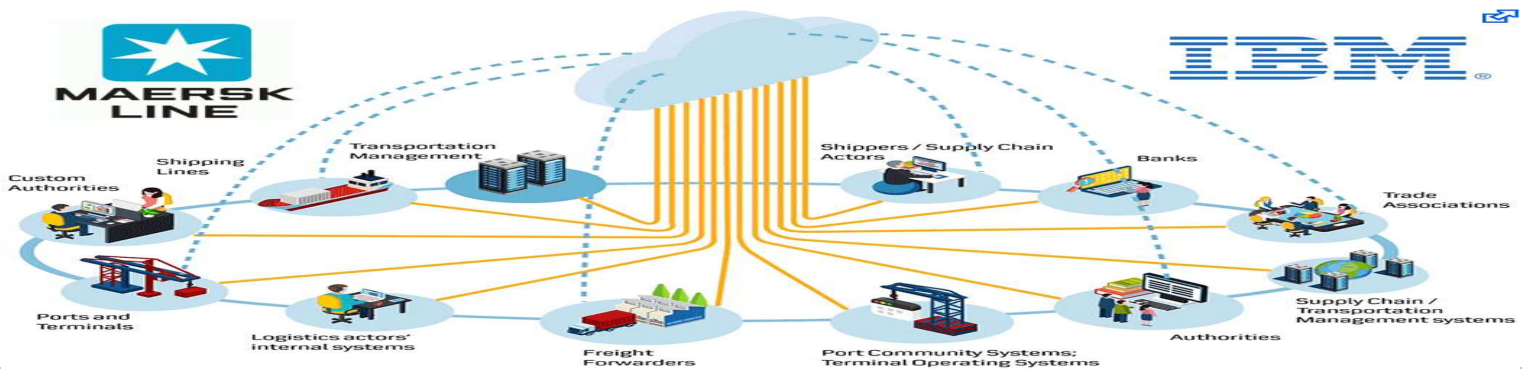
www.cbinsights.com

CBINSIGHTS

区块链海事行业应用分析 Blockchain in Shipping – Pilot Cases



- 打通了各参与方封闭的业务系统限制，共享数据，透明可靠，并可以实时跟踪与追踪，降低了运营风险，提高了安全与保障
- 减少中间环节，提高效率，降低成本，缩短交易时间，增强客户体验
- 物流，信息流和价值流“三流合一”，智能合约应用，使得绕过第三方（如银行）完成支付实现可能
- 减少纸质流程，及流转过程中出错及引起延误的机会，降低行政成本
- 网络攻击防范能力增强
- 积累信任，形成海运行业数字化生态系统
- 需要关注：跨国主权监管，政府机构接受/参与，行业标准等



区块链海事/ 航运应用场景Blockchain in Shipping



区块链在商品溯源、版权保护与交易、电子证据存证、财务管理、精准营销、大数据交易、工业、能源、医疗、数字身份、物联网、公益、物联网、电子政务等典型场景在尝试着系列的应用



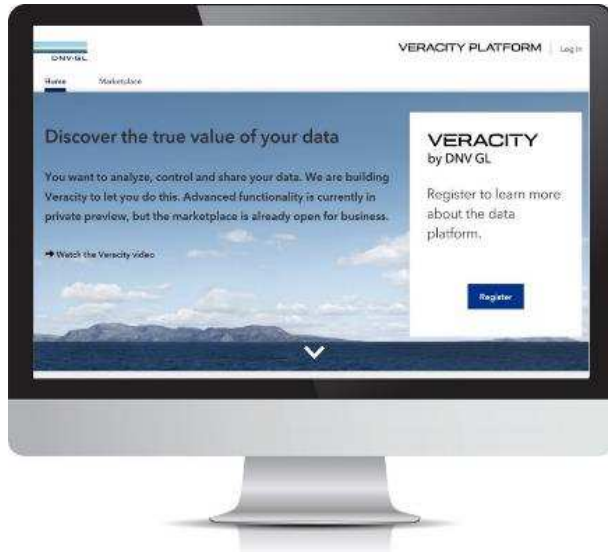
区块链海事/ 航运潜在应用场景：

- 解决企业内部效率/信任提升需求
- 解决行业那些有明显痛点，有商业增量
- 降低中介化依赖
- 与Iot, AI, Cloud 等新技术结合形成新的数字商业模式
- 包括供应链，物流链的跨行业，跨区块链互联互通

DNV GL 数字化转型战略与进程 Digitalization Strategy and Progress



Veracity – DNV GL 开放的行业数据管理平台



解锁并利用数据的真实价值

分析，分享及整合数据

从DNV GL和其他供应商获取数字化服务

一个值得信赖的共同创新生态系统



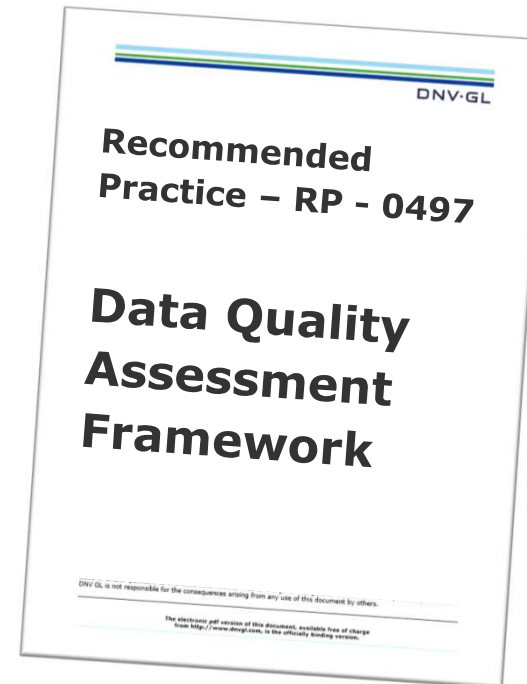
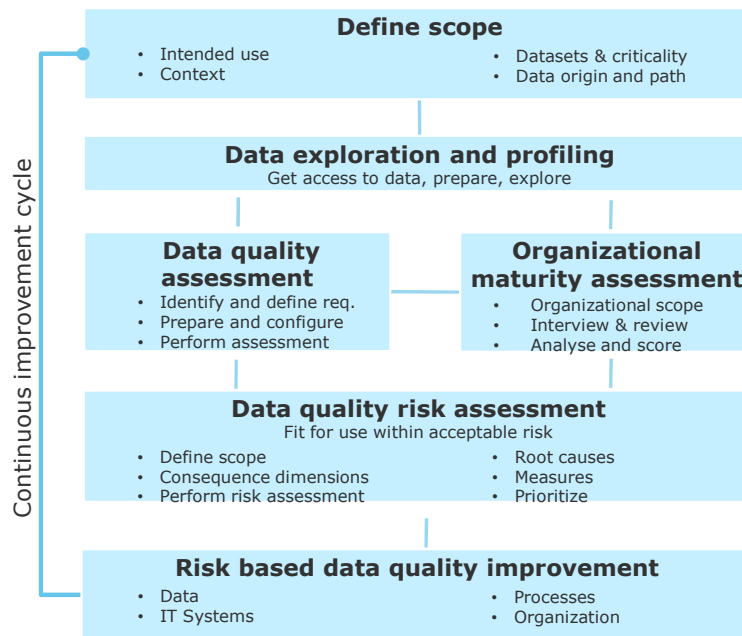
DNV-GL

► GROUP ► NEWS

Data management platform approaches one million service subscriptions as number of Veracity users pushes past 120 000

SHARE: PRINT:

DNVGL 数据质量评估程序 Data Quality Assessment Process



数字船舶证书 Electronic Cert.

DNV-GL

To whom it may concern

DNV GL AS Technical Support
Machinery Systems
P.O. Box 300
1322 Hovik
Norway
Tel: +47 67 57 99 00

Date:
2017-05-16

ELECTRONIC CLASS AND STATUTORY CERTIFICATES AND DOCUMENTS ON BOARD

DNV GL confirms that this vessel may be carrying electronically signed class and statutory certificates and other documents issued by DNV GL on-board. Note that the vessel may carry both electronically signed documents and signed paper documents.

The electronic signature solution used for signing satisfies the requirements stated in FAL.5/Circ.39/Rev.2 (Guidelines for the use of electronic certificates), as follows:

The electronic certificates are consistent with the format and content required by the relevant international convention or instrument.

The signature panel is shown at the top of the document viewer. If a document is tampered with it will show as an explicit text, stating that this document is not authentic. Please note that this is how Adobe Reader is showing the signature. Other pdf viewers may show this differently, and it is recommended to use Adobe Reader which can be downloaded free of charge from <http://www.adobe.com/products/acrobat/readstep2.html>

The documents carry an electronic seal and a unique tracking number (UTN) for the purpose of checking the validity and authenticity.

The validity of the documents can be checked through an authentication service by accessing <https://trust.dnvgl.com> and entering the UTN and the ship's DNV GL ID. For certificates the validation will show whether it is currently valid, while for other documents it will show the validity at the date of issuance.

for DNV GL

When printed, the paper printout is produced from the electronically signed document in accordance with IMO FAL.5/Circ.39/Rev.2 and does not require a handwritten signature. Validation and authentication can be obtained from trust.dnvgl.com by using the Unique Tracking Number (UTN): n915367-III and ID: 21651

(name)
Surveyor

Form code: 40.7a Revision: 2016-09 www.dnvgl.com Page 1 of 1

UTN: n771406-ccc © DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.



智能检验安排 Smart Survey Booking

My DNV GL Smart Survey Booking

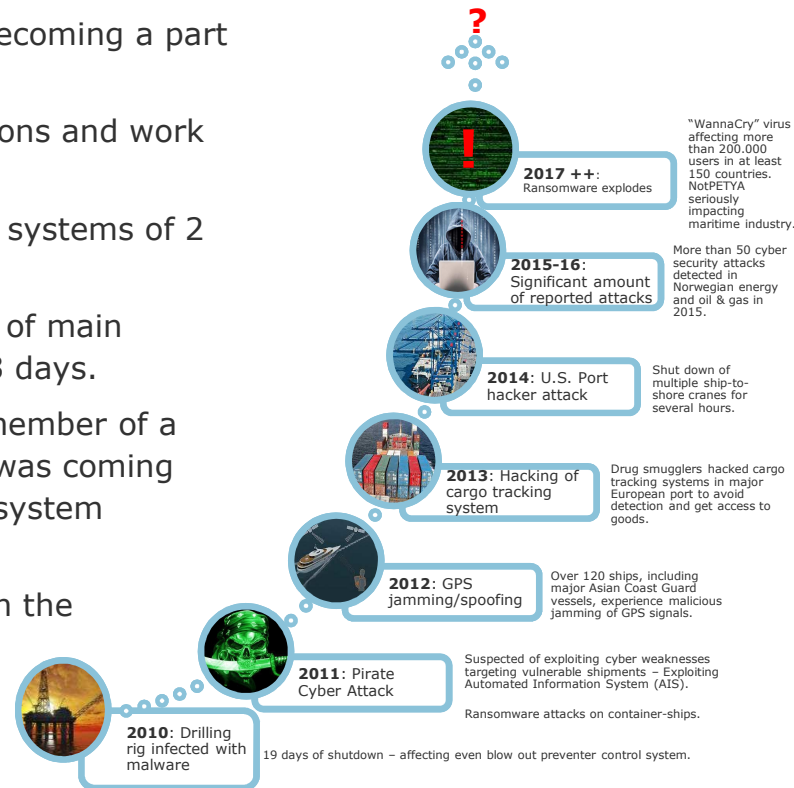
- TRANSPARENT**
Offering transparency on estimated travel / overtime cost in advance.
- BENCHMARKING**
Benchmark alternative port stay options with respect to cost and combination of scope.
- SMART**
Proactive notification of upcoming, cost-effective combinations of surveys.
- EFFICIENT**
Ensuring more time and guidance for preparation of surveys.

APPROVAL FINDER

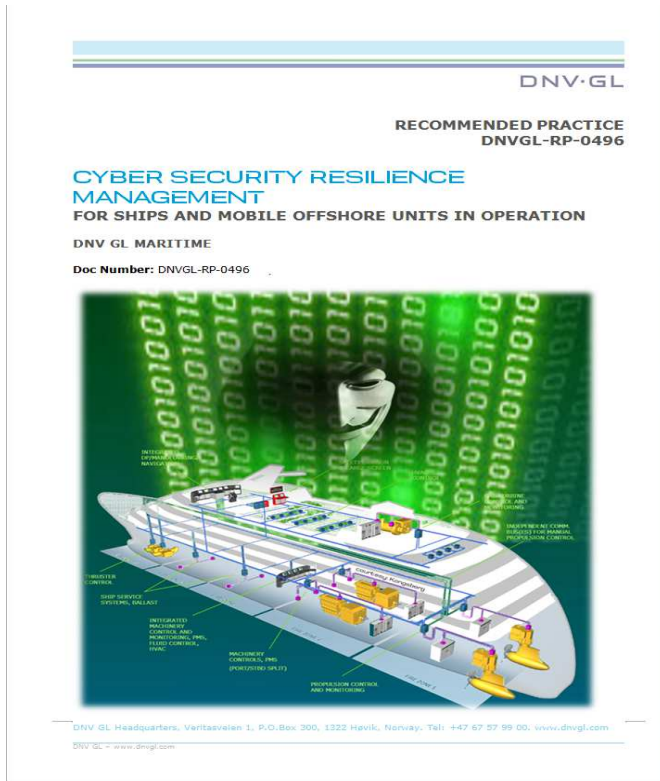
CERTIFICATION AND VERIFICATION

网络安全趋势 Cyber Security Challenge

- Cyber security **threats are progressing** and becoming a part of our daily business
- Some examples from DNV GL on-board inspections and work with clients:
 - Infected **ECDIS chart updates** cause EDCIS systems of 2 bulk carriers to shut down
 - **Ransomware** on master's PC leading to loss of main switchboard and loss of vessel operation for 3 days.
 - While ongoing routine maintenance, a crew member of a vessel received an email made to look like it was coming from the shore side ship manager asking for system **passwords 'for confirmation'**.
 - A shipping company suffered a cyber attack in the office directed at the **shore-based server**. With corrupted data also on **vessel** as consequence.



网络安全指南与审核 Cyber Security PR and Audits



Interviews and spot checking (comparing the current safeguards with target protection levels):

- against policy, procedures, responsibilities and competence
- existence of controls and barriers



无人机检验 Drone Survey



无人机检验自升式钻井平台 Drone Survey onboard a Jack-up driller at UK



DNV GL 数字化转型战略与进程 The digital journey of Classification



谢谢 Thank You!

Jin.James.Huang@dnvgl.com

www.dnvgl.com

SAFER, SMARTER, GREENER

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