

Successful Diffusion of Digital Factory in Automotive Industries

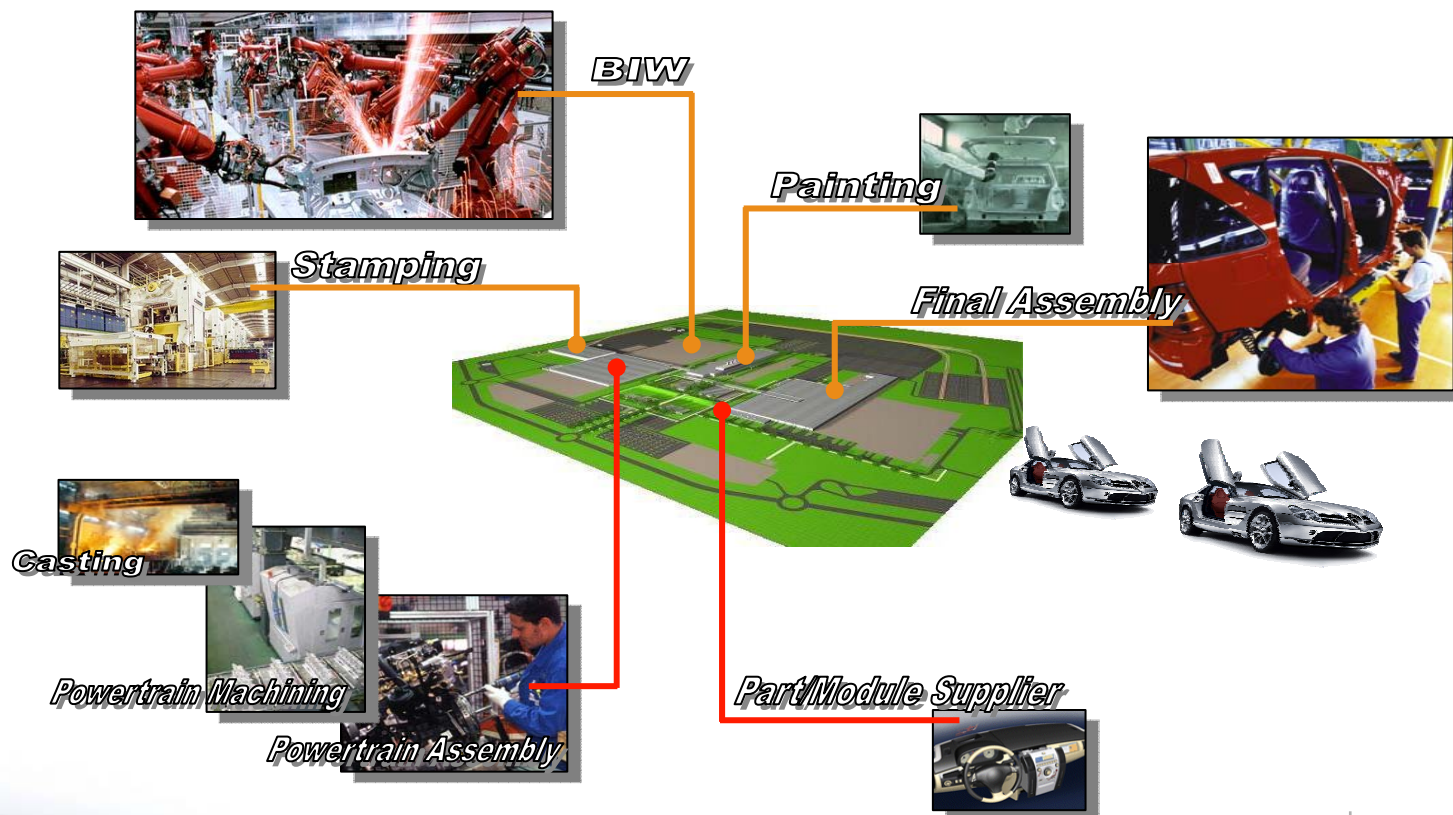
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1. Definition of Digital Factory

- 디지털공장의 정의 ?
- 디지털공장의 비전은?
- 왜 디지털공장을 이야기 하는가?



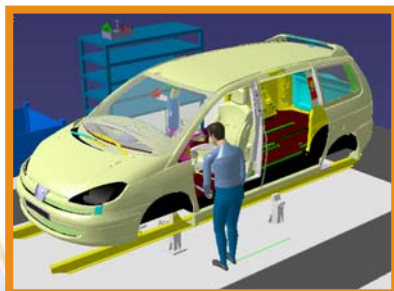
1. Definition of Digital Factory

- 협의의 정의 : 물리적인 공장을 디지털공장으로 변경
 - ⚙ 설비의 검증
 - 👤 작업자의 검증
 - ⚙ 자재/중간자재/완제품의 검증



디지털공장

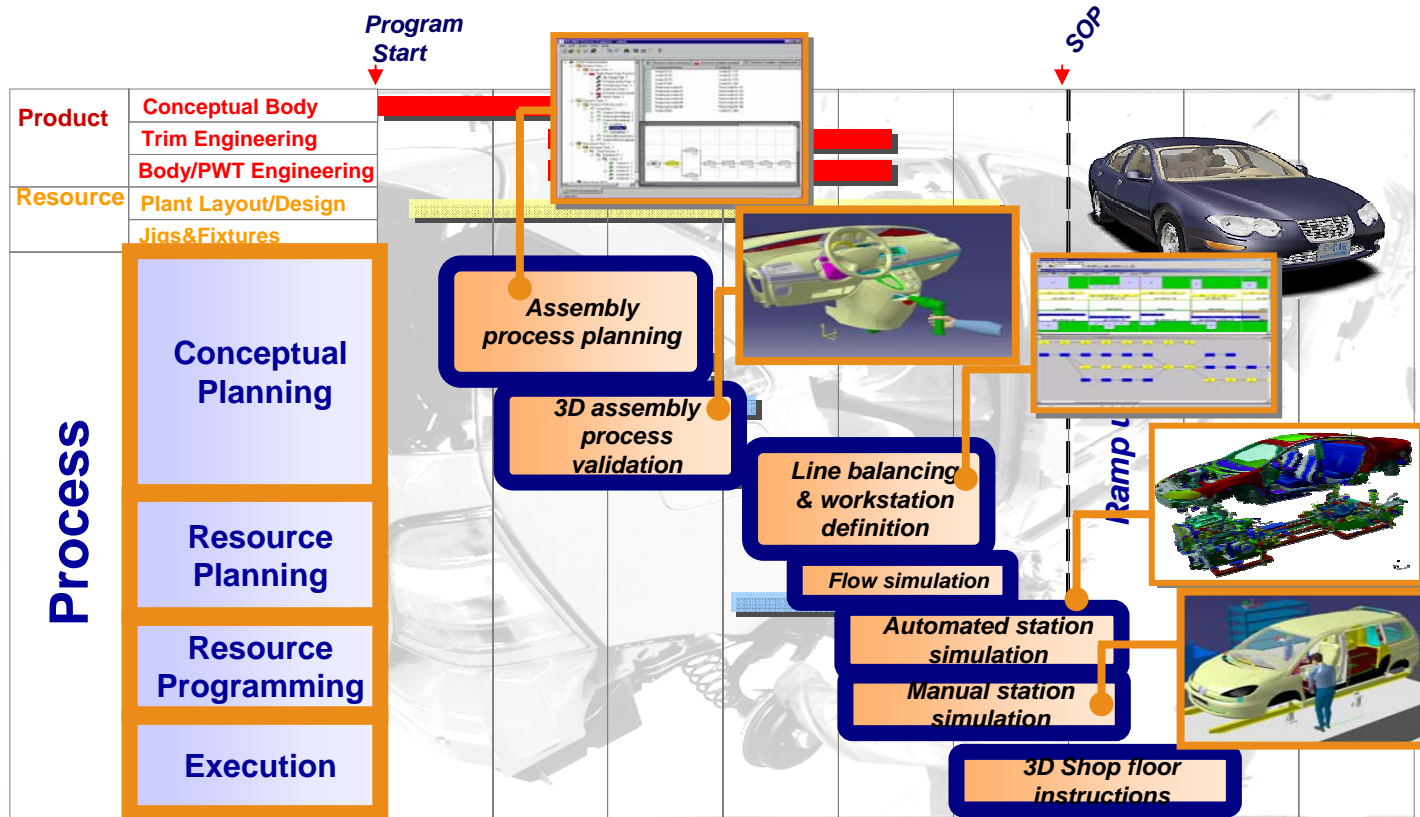
실제공장



1. Definition of Digital Factory

광의의 정의

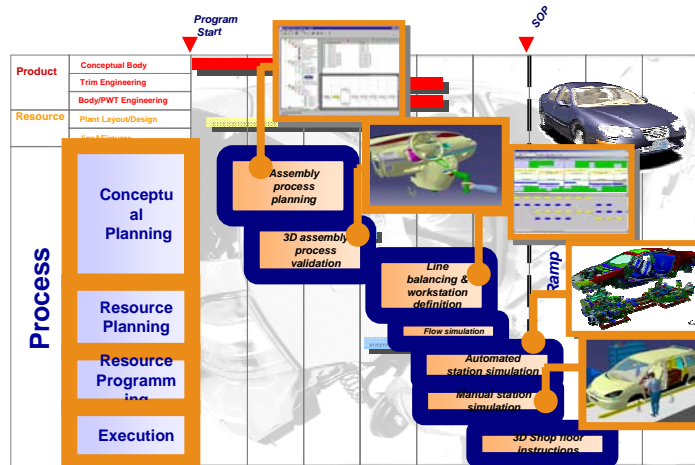
- Product/Process/Resource의 정의/상세화/시뮬레이션
- 의사결정 시스템



1. Definition of Digital Factory

미래의 확장된 정의 : 2 R (Realistic, Real time)에 의한

- 의사결정시스템
- 모니터링시스템



**Real Time
Plant
Intelligence
and Control**



2. 국내외 자동차업체의 디지털공장 사례

- 일본의 Big 3 : Toyota/Nissan/Honda
- 한국의 Big 3 : HKMC/쌍용차/GM대우
- 미국의 Big 3 : GM/FORD/DC



NISSAN V-3P Project

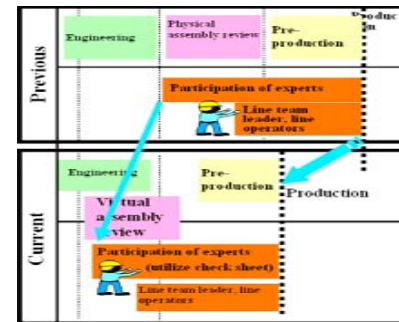
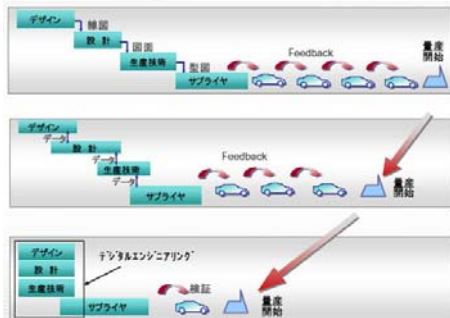


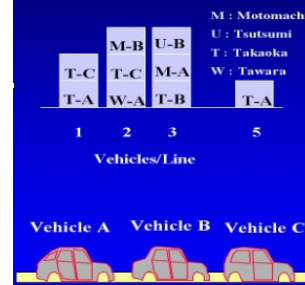
Photo from physical assembly review



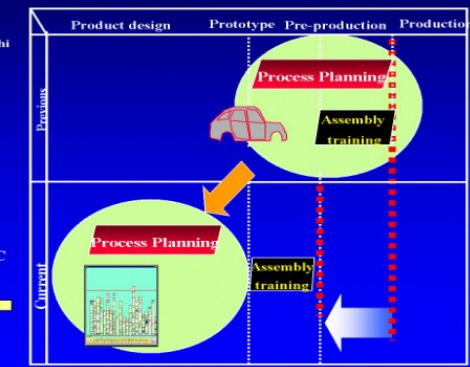
Photo from virtual assembly review



(1) Feature of Toyota's Line

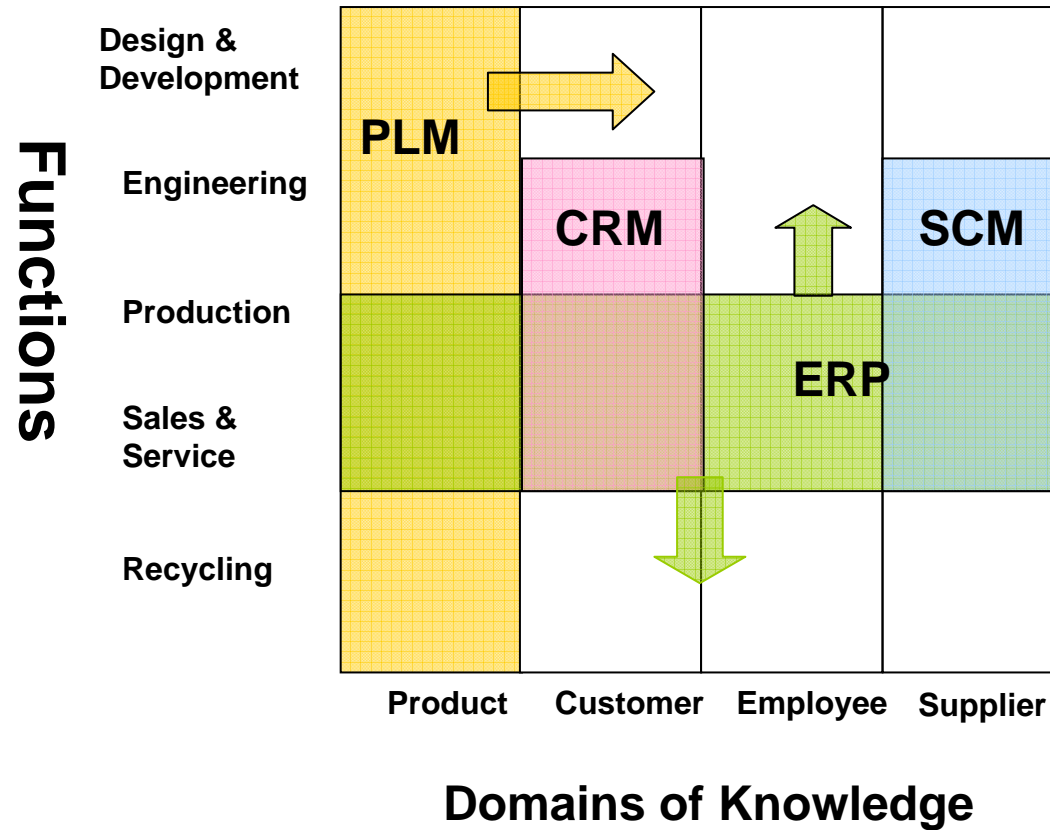


(2) Front loading of process planning



3. 성공적인 디지털공장 확산의 요인들

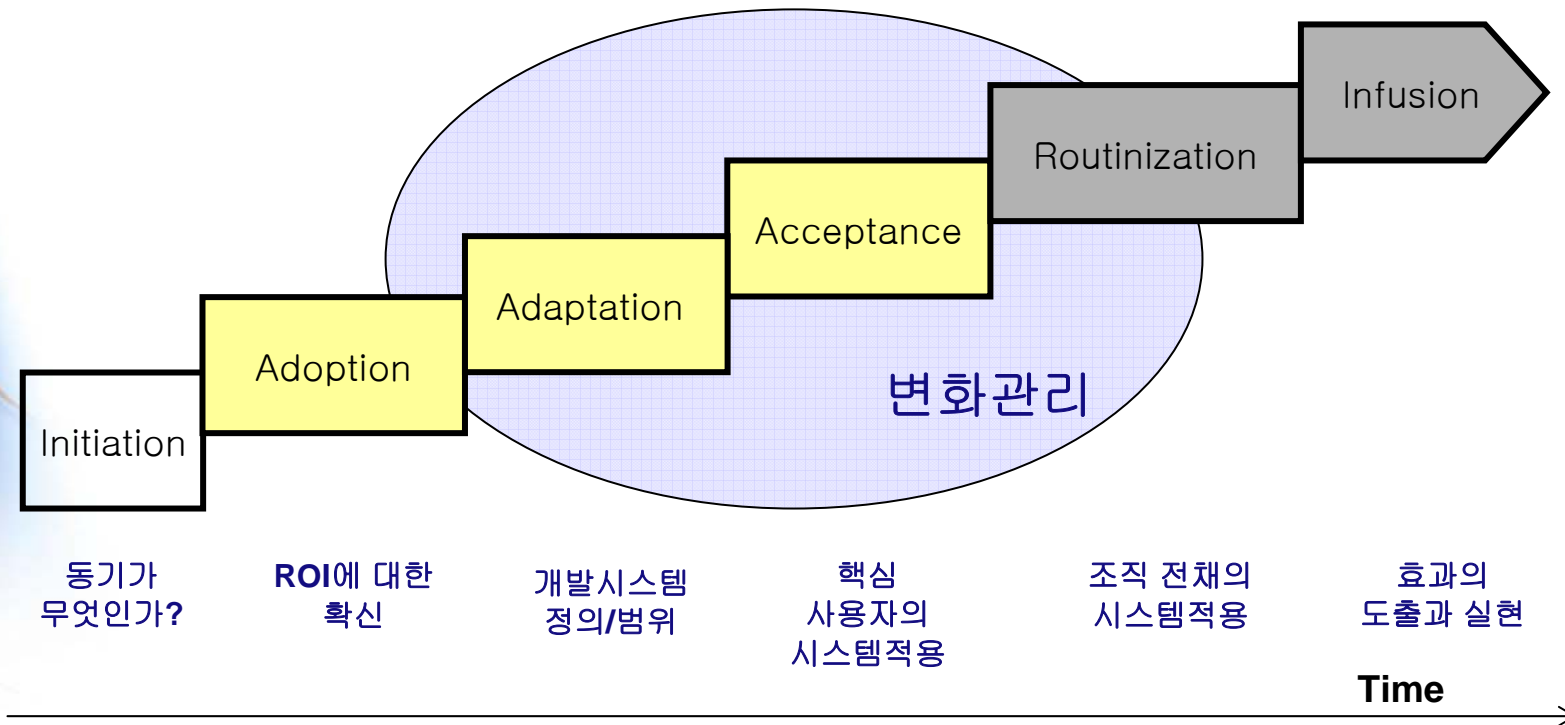
PLM의 정의



Grieves, Michael ; “ Product Lifecycle Management : Driving The next Generation of Lean Thinking ”, MacGraw-Hill, 2006, page 58

3. 성공적인 디지털공장 확산의 요인들

정보기술의 Implementation Model



By Coopers & Zmud(1990): A variation of Stage Model of IT implementation

4. 시사점

- 각 자동차 기업들의 주요한 전략적 차이에서 발견하는 시사점
- 자신의 조건에 맞는 접근방법
 - ♣ 자신감
 - ♣ 내부주도 또는 외부주도
 - ♣ 맞춤형 또는 기성복형
 - ♣ Big Bang 또는 Phase Approach
 - ♣ 변화관리
 - ♣ 표준화를 통한 프로세스 변화

4. 시사점: TMC vs. Nissan vs. Honda



“DELMIA’s Digital Manufacturing solutions are integral to the New Toyota Production System”

“Results of the initial V-Comm implementation have shown lead time shortened by 33 percent, changes reduced by 33 percent, and development costs reduced by 50 percent, validating the importance of simulation technologies and the early involvement of the manufacturing team”



“DELMIA offers Nissan end-to-end automotive process coverage solutions from preliminary process planning to detail validation. With DELMIA solutions, we are aiming to enable early validation of preparation in vehicle production.”

Toshiyuki NAKAJIMA, Senior Manager, Vehicle Planning and Strategy Department, Vehicle Production Engineering Division, Nissan Motor, Co., Ltd



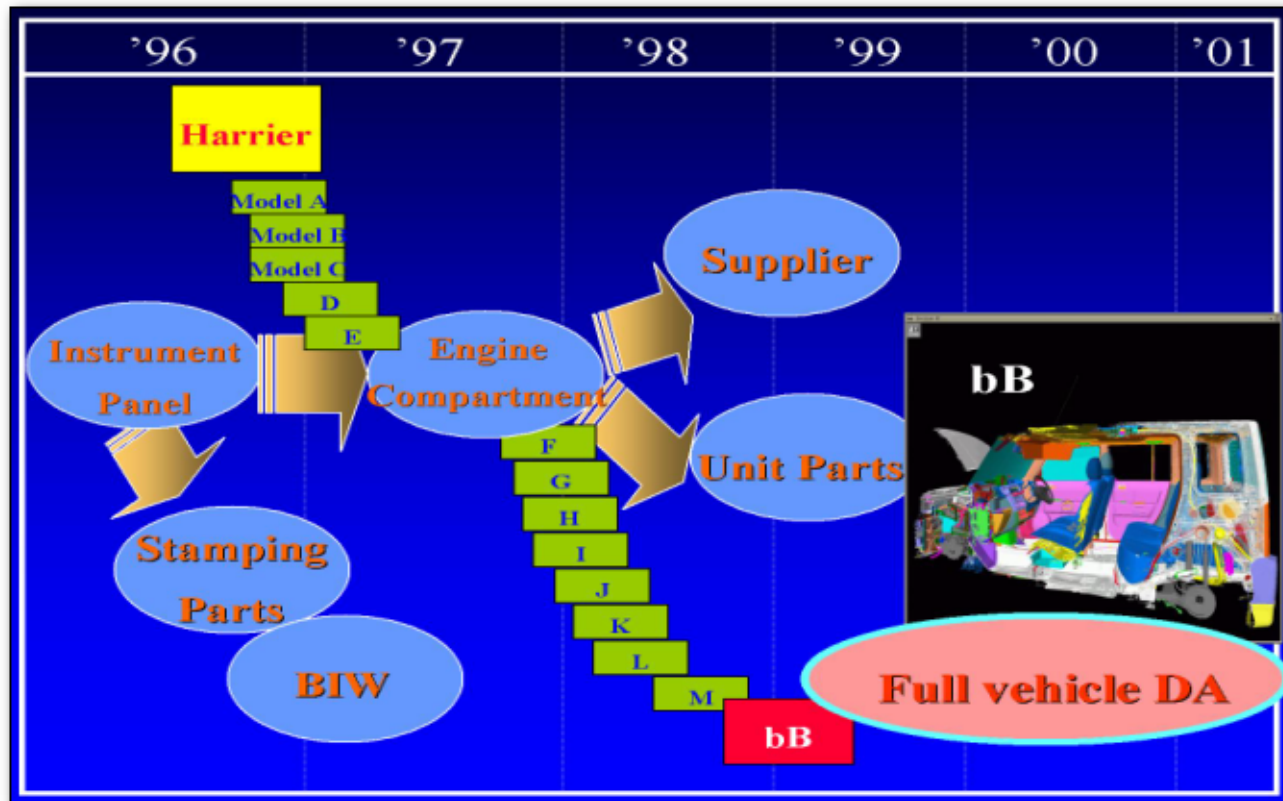
HONDA

DELMIA Digital Manufacturing Solution is strategic Solution for Final Assembly, validating & simulating all assembly operations including human operations in the virtual environment.



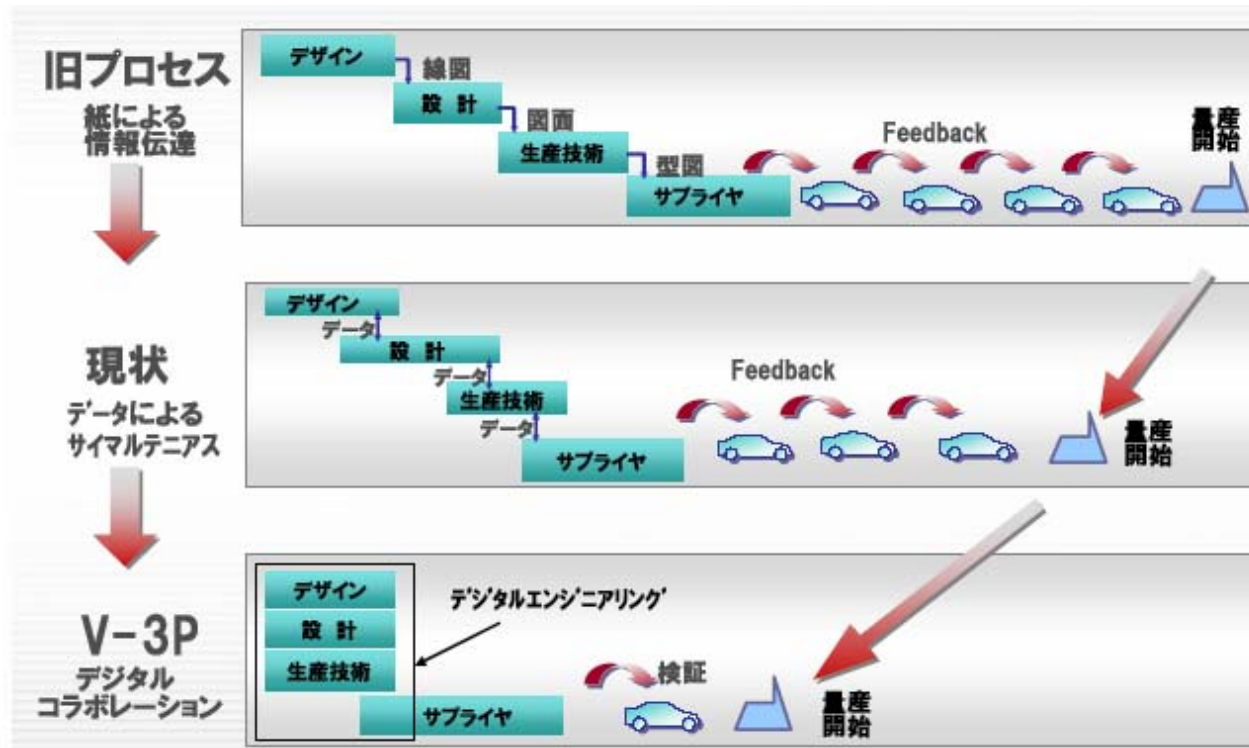
4.시사점: TMC

- Leadership
- 내부 주도형
- 長考형+Phase Approach + Big Bang
- Top Down

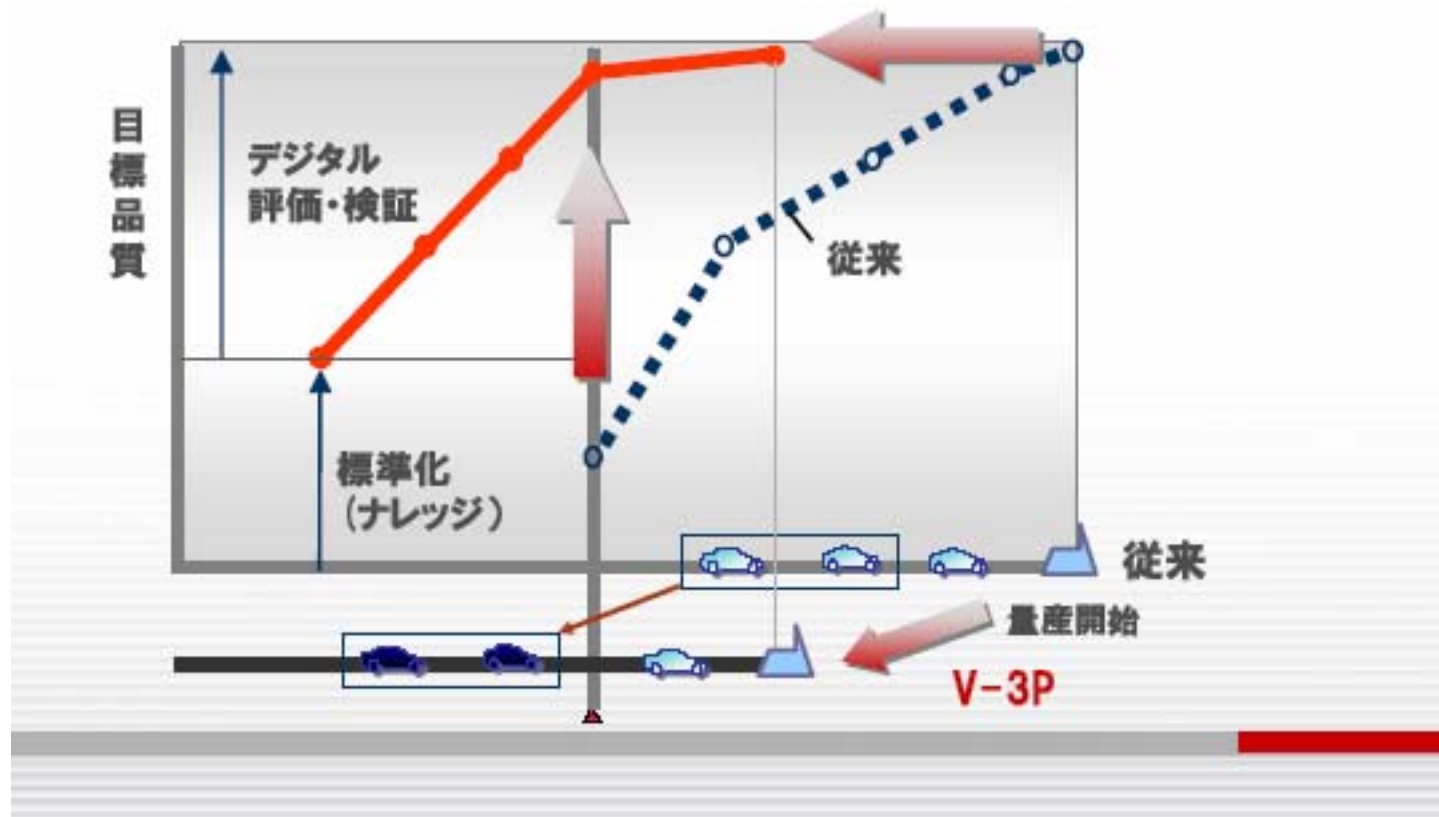


4.시사점: Nissan

- Bottom Up
- 기성복
- Big Bang Approach
- Process change + Digital Innovation



4.시사점: Nissan



4. 시사점: TMC vs. Nissan vs. Honda

“DELMIA’s Digital Manufacturing solutions are integral to the New Toyota Production System”

1. 의사결정 접근 방법 : Top Down vs. Bottom Up
2. Implementation : Incremental Approach (Phase Approach) vs. Big Bang Approach
3. 적정한 비용의 산정
 - 100~200 억 원 규모시스템 개발비
 - 10%~20%유지보수 비용
4. 업무 프로세스의 변화에 따른 변화관리의 노력



5. 결어

디지털공장은 이미 일어난 미래이다...

