

1

PERKEMBANGAN TIK DAN INFRASTRUKTUR

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Outline

2

- Tentang TIK Dulu dan Sekarang
- Prioritas TIK Depdiknas
- Infrastruktur TIK di Indonesia
- Infrastruktur jaringan (JARDIKNAS)
- Potensi ICT untuk Pendidikan
- Trend WEB 2.0

Tentang TIK – Dulu dan Sekarang

3

Dulu	Sekarang
<ul style="list-style-type: none"> ▪ Komputasi, pemrosesan data, pengaturan data ▪ Terpusat pada mainframes 	<ul style="list-style-type: none"> ▪ Perancangan dan pembuatan sistem serta interaksi dengan dunia ▪ Terpusat pada jaringan ▪ Masuk dalam segala bidang ▪ Digunakan semua orang, dimana saja, kapan saja ▪ Multimedia ▪ Faktor dalam ekonomi dan inovasi ▪ Issue dlm etika, privasi, keamanan ▪ Kebutuhan rumah tangga

The ICT and Information Age

4

- New world
 - We are all connected
 - Digital communities
 - Triple play: internet, phone, tv
 - Smart environments
 - Everything is informatised
- New economy
 - Information service industries
 - Company- and society-wide applications
 - Worldwide interchange of data/documents/...
- New science
 - Information-based structures in all sciences
 - Modelled by programs and computation
 - Virtual laboratories, digital libraries

Ruang Lingkup TIK Depdiknas

5

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    graph LR
      A[TIK untuk Pendidikan (E-Edukasi)] --> B[Infrastruktur]
      A --> C[E-Pembelajaran]
      A --> D[E-Administrasi]
    
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Jabaran TIK Depdiknas

6

- Akses -> Infrastruktur & Jaringan
 - Pengembangan Jardiknas
 - Pengembangan penyiaran dan perangkat penangkap siaran TVE
- Mutu, relevansi & daya saing -> Sistem & Aplikasi E-pembelajaran
 - TV Edukasi
 - Buku Sekolah Elektronik (e-book)
 - E-learning u/ PT
 - E-bursa
 - E-learning material (dari komunitas)
- Tatakelola, akuntabilitas & pencitraan publik
 - Data Induk Siswa-Guru-Sekolah
 - Pangkalan Data
 - Decision Support System

PROGRAM PRIORITAS 2008

1. **Penuntasan Wajar Dikdas 9 Tahun:**
 - ▶ Optimalisasi pemanfaatan Jardiknas
2. **Peningkatan Aksesibilitas, Mutu, Daya Saing, dan Relevansi Pendidikan Menengah**
 - ▶ Pembangunan perpustakaan, laboratorium, workshop, dan pusat sumber belajar berbasis TIK di SMA/SMK
 - ▶ Penerapan e-pembelajaran di SMA/SMK
3. **Peningkatan Aksesibilitas, Mutu, Daya Saing, dan Relevansi Pendidikan Tinggi:**
 - ▶ Penerapan e-pembelajaran di PT

Kondisi Infrastruktur TIK Di INDONESIA (sampai dengan akhir 2007)

Copper	2G-2.5G	Broadband	
Basic NB data	Basic SMS-MMS NB internet	Multimedia	Audio Video

15,08 % Control terhubung ke IP

24 % Core terhubung ke IP

3,4 % Access terhubung ke IP

Sumber: DepKomInfo

PSTN	FWA (2G)	FWA & Seluler (3 G)	Seluler (2G)	Dial-up	ADSL	IP-TV	PAY-TV
9 jt	7,9 jt	3 jt	69,7 jt	2,5 jt	0,2 jt	0	0,45 jt

Kondisi Infrastruktur TIK Di INDONESIA (perkiraan 2011)

Packet Switched Service

Basic service, Duoplay, Tripleplay, Quadplay

85,03 % Control terhubung ke IP

72 % Core terhubung ke IP

45,5 % Access terhubung ke IP

Sumber: DepKomInfo

PSTN	FWA (2G)	FWA & Seluler (3 G)	Seluler (2G)	Dial-up	ADSL	IP-TV	PAY-TV
10,9 jt	23 jt	35,5 jt	95,5 jt	5,1 jt	3 jt	4,8 jt	1,5 jt

Kondisi TIK Indonesia (Nasional vs. Global)

Rangking TIK Indonesia				
Kategori	Sumber	Rangking	Jumlah Negara	Indikator
E-Readiness	Economist Intelligence Unit	60	65	<ul style="list-style-type: none"> Network Access Networked Learning Networked Society Networked Economy Network Policy
Digital Opportunity Index	ITU	38	40	<ul style="list-style-type: none"> Opportunity Infrastructure Utilization
E-Government	University of Waseda	29	32	<ul style="list-style-type: none"> Network Preparedness Required Interface Functioning Application Management Optimization Homepage Promotion of e-Government

Sumber: DepKomInfo

Indikator TIK	
<input type="checkbox"/>	Penetrasi PC
<input type="checkbox"/>	Penetrasi Internet
<input type="checkbox"/>	Broadband
<input type="checkbox"/>	Pelanggan Telepon Seluler

Isu Pokok	

15

Isue Pokok (1)	
Isu Pokok	Fakta
Infrastruktur	<ul style="list-style-type: none"> Penetrasi Internet rendah dan belum merata Penetrasi PC rendah Tarif Bandwidth
Regulasi	<ul style="list-style-type: none"> RUU ITE, belum ada RPP, RPM, RKD Cyberlaw belum lengkap Standardisasi Data dan Konten Belum konvergenitif
SDM	<ul style="list-style-type: none"> Participation rate yang rendah e-Literacy masih rendah Apresiasi terhadap bidang TIK rendah Standar kompetensi belum lengkap

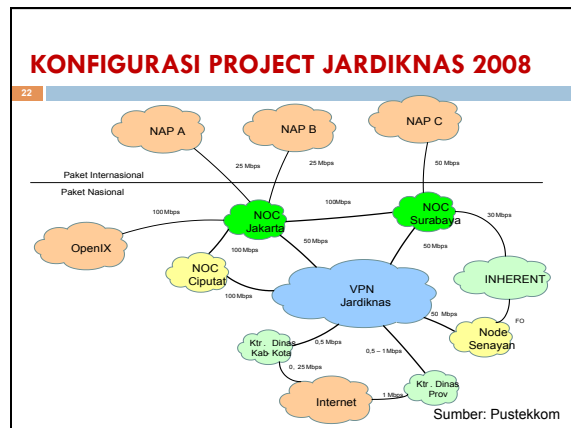
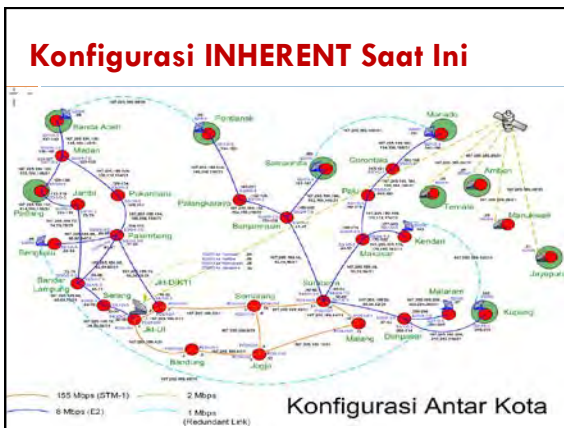
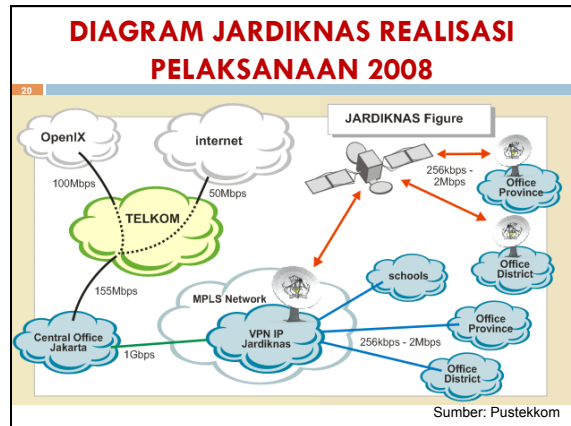
Isue Pokok (2)	
Isu Pokok	Fakta
Pendanaan	<ul style="list-style-type: none"> Lembaga pembiayaan untuk kepemilikan PC terbatas Ketentuan perpajakan yang belum kondusif
Interoperabilitas dan Interkonektivitas e-Leadership	<ul style="list-style-type: none"> Belum konvergenitif Belum tersosialisasi dengan baik Adanya PULAU PULAU INFORMASI Peran sebagai rujukan TIK belum terbangun
Industri	<ul style="list-style-type: none"> Jumlah pengembang rendah Tingkat pembajakan perangkat lunak masih tinggi

INFRASTRUKTUR JARINGAN	
JEJARING PENDIDIKAN NASIONAL	

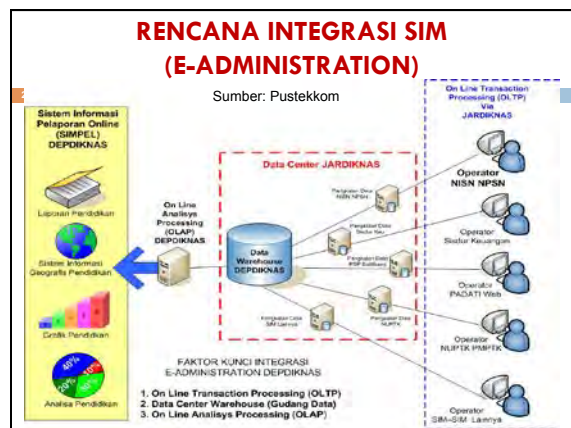
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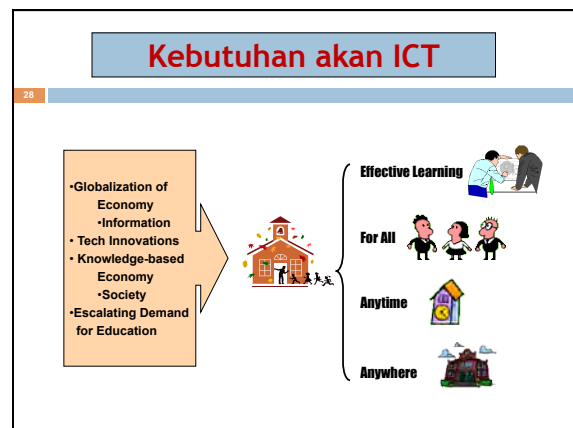
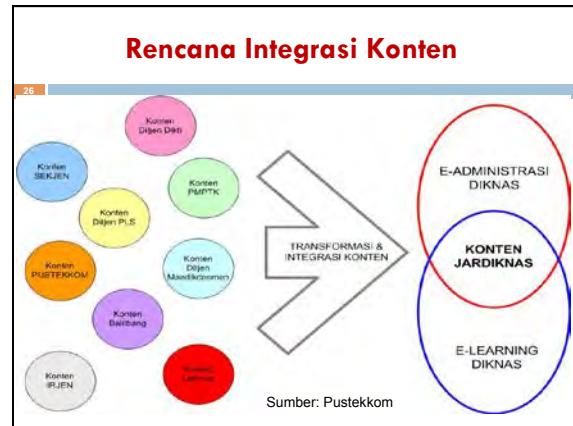
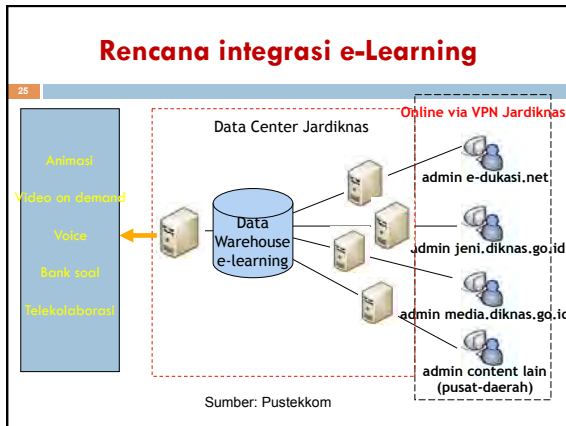
Pemanfaatan Zona JARDIKNAS

- **JARDIKNAS Kantor Dinas/Institusi**
 - Transaksi data online SIM Pendidikan
- **JARDIKNAS Perguruan Tinggi [inherent]**
 - Riset dan Pengembangan IPTEKS
- **JARDIKNAS Sekolah**
 - Akses Informasi dan E-Learning Sekolah
- **JARDIKNAS Guru dan Siswa**
 - Akses Informasi dan E-Learning Personal



PEMANFAATAN JARDIKNAS





- ### Potensi:
- #### 1. Perluasan Akses
- Radio Broadcast
 - Interactive Radio Instruction
 - Television
 - Virtual Schools
 - Virtual Universities

Potensi:
2. Peningkatan Efisiensi

31

<p>Issues</p> <ul style="list-style-type: none"> • Dual Shift Systems • Multigrade Schools • Small Urban or Rural Schools • Flexibility in Learning Schedule 	<p>Solutions</p> <ul style="list-style-type: none"> ▪ Broadcast Radio ▪ Interactive Radio ▪ Educational TV ▪ Virtual Online Courses
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Potensi:
3. Peningkatan Kualitas Pembelajaran

32

<p>Potential</p> <ul style="list-style-type: none"> □ Motivate and engage learners □ Bring life to concepts and processes □ Foster inquiry □ Provide flexibility □ Allow application of information □ Provide access to world of information □ Bring the world into the classroom □ Offer collaborative opportunities and communication □ Offer tutored and individualized learning 	<p>Solutions</p> <ul style="list-style-type: none"> □ Radio and TV □ Multimedia Learning Modules □ Virtual Labs □ Connecting to the Worlds □ Designing and Creating Things
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Potensi:
4. Peningkatan Kualitas Pengajaran

33

<p>Issues</p> <ul style="list-style-type: none"> □ Difficult Profession □ No One-Shot Training □ Continuum <ul style="list-style-type: none"> • Initial Training • Lifelong Upgrading • Connecting 	<p>Solutions</p> <ul style="list-style-type: none"> □ Multimedia Training and Support System □ Training Videos □ Teacher Development Portal □ Internet Resources for Teachers
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Potensi:
5. Peningkatan Skill

34

<p>Issues</p> <ul style="list-style-type: none"> □ New Workplace Realities □ E-Training <ul style="list-style-type: none"> • Just-in-Time • Convenient Place • Up-to-Date • User-centric 	<p>Solutions</p> <ul style="list-style-type: none"> • Simulations • Competency-based multi-media • Video and Interactive media • Workplace Training
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Potensi:
6. Belajar Terus Menerus

35

<p>Issues</p> <ul style="list-style-type: none"> • Workers need to learn new skills • Modern societies demand constant updating • The “educated” can become obsolete • Life-cycle pattern is changing 	<p>Solutions</p> <ul style="list-style-type: none"> • Radio and TV • Multimedia Packages • Online Courses • Open Universities • “Third Age” Universities
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Potensi:
7. Perencanaan dan Manajemen

36

- Management of Institutions and Systems
 - School: Admissions, student flow, personnel, staff development, facilities...
 - System: School mapping, personnel payroll, MIS, communication, information, . . .
- Management of Policy Making
 - Storage and analysis of data
 - Construction and assessment of policy scenarios
 - Tracer studies and tracking systems

Potensi:
8. Hubungan Komunitas

- ICT access varies within countries
- Disparities is magnified by gender factor
- ICT access contributes to escape from poverty
- ICT access for all requires attention to
 - Infrastructure
 - Cost
 - Laws and regulations

E-LEARNING

Isu di Sekitar Pendidikan Tinggi

Isu	Pendidikan Tinggi	Solusi dgn TIK
<ul style="list-style-type: none"> Kesenjangan Pendidikan Pedesaan vs. Perkotaan Reformasi Pendidikan Pertukaran kredit Pengembangan Kemampuan Mengajar Pelatihan tidak mencukupi Multi-Media Globalisasi 	Universitas Institut Sekolah Tinggi	<ul style="list-style-type: none"> ■ Memperluas kesempatan belajar - Pendidikan di pedesaan - Pertukaran pengajar - Pembelajaran mandiri ■ Hemat Uang/Waktu - Pelatihan Guru - Distribusi Materi Pelajaran secara elektronik ■ Peningkatan Kualitas dan Kuantitas - Kerjasama antar Universitas

Keutamaan Pendidikan Berbasis TIK

Bagi Mahasiswa	Bagi Dosen	Bagi Universitas
Kuliah yang fleksibel (Dapat diakses kapan saja) Pembelajaran 24x7 Efek Postif Pembelajaran Meningkatkan Kemampuan Akademik	Materi Pengajaran Yang Kaya HTML, SCHE, Video, Excel, Power Point Hemat Waktu/Biaya Waktu Lebih Banyak Untuk Riset	Manajemen dan Penggunaan Ulang Sumberdaya dan Materi Pengajaran HTML, SCHE, Video, Excel, Power Point Skalabilitas Tinggi Biaya Murah Usaha Baru



e-Education (Digital/Multimedia)

Konsep e-Learning

TRENDS WEB 2.0

Web 1.0 VS Web 2.0 Examples

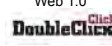

49

Web 1.0  VS Web 2.0 

- o **DoubleClick:**
 - **Serve web for publishing but not for participating**
 - o Only advertisers control what to publish, no participation from customers
 - **Not harnessing collective intelligence and service is not updated automatically**
 - o No enhancement in service if the database is not updated by its employees
 - **Service does not serve the long tail**
 - o Formal contract required

Web 1.0 VS Web 2.0 Examples



50

Web 1.0  VS Web 2.0 

- o **Google AdSense:**
 - **Serve web for participating**
 - o Everyone (either advertisers / publishers) can participate. Publishers publish ads that are related to their content.
 - **Harnessing collective intelligence**
 - o As the Google Network grows, Google advertisers can seamlessly get a better advertising service because their ads will be able to reach more end users as more sites can match keywords provided by the advertisers
 - **Service is updated automatically**
 - o Update seamlessly (Keyword-based Ad Filtering)
 - **Service serves the long tail**
 - o Everyone can participate

Web 1.0 VS Web 2.0 Examples



51

Web 1.0  VS Web 2.0 

- o **Ofoto (Kodak Gallery):**
 - **Serve web for publishing but not for participating**
 - o Users upload pictures to web but visitors cannot "find" / "tag" individual pictures in an album
 - **Not harnessing collective intelligence**
 - o Share albums cannot be viewed easily by search
 - **Static user experience**
 - o Cannot integrate the creativities from publishers / visitors



Web 1.0 VS Web 2.0 Examples

52

Web 1.0  VS Web 2.0 

- o **flickr**
 - **Serve web for participating**
 - o Everyone can participate
 - "Flickr is what butters the borders between your photos to the people you want to see them." - www.flickr.com
 - **Harness collective intelligence**
 - o Tags are used for searching
 - o New tag feature: machine tags
 - namespace:predicate=value
 - Able to query for wildcards in namespace, predicate, and value
 - **Rich user experiences**
 - o Dynamic, encourage creativity
 - o Everyone is a developer

Web 1.0 VS Web 2.0 Examples

Web 1.0  VS Web 2.0 

Personal Websites

<<OUT>>	<<IN>>
Serve web for publishing	Serve web for participating
Not harnessing collective intelligence	Harnessing collective intelligence
Simply use data from data suppliers	Enhancing the data from data suppliers
It is a product	It is a service
N/A	Lightweight programming models Easy to reuse and innovate mashups
Static user experiences	Rich user experiences


Web 2.0 continues ... (Mashups)

54

- o **Mashup**
 - A website or application that integrates content from more than one source into an entirely new innovative experience
- o **Idea**
 - Content provider provides API to allow others to build and integrate its content
- o **Mashups genres**
 - Mapping
 - Video and photo
 - Search and shopping
 - News
- o **Mashups examples**
 - <http://www.programmableweb.com/>


Web 2.0 continues ... (Mashups)

- Mapping Mashups
 - housingmaps.com
 - Mashup of two open source on web
 - Craigslist
 - Google Maps
 - Extract from Craigslist the all of rental classified and mixed them up with Google Maps
 - Google Maps API
 - Embeds Google Maps in your web page with JavaScripts
 - Allows overlays (e.g. markers) and customized descriptions boxes



Web 2.0 continues ... (Mashups)

- Video and photo mashups
 - flappr (www.bodef.org/flappr/)
 - Mashup of flickr
 - Lets you do everything that you can from flickr but all in one window without refreshing the window
 - flickr API
 - Request and response using
 - REST
 - XML-RPC
 - SOAP
 - Application needs to parse the resulting response



Web 2.0 continues ... (Mashups)

- Search and shopping mashups
 - Examples
 - Mashups of eBay, Amazon
 - Comparison of best prices, best coupons
 - eBay API
 - SOAP
 - Amazon API (AWS)
 - REST
 - SOAP



Web 2.0 continues ... (Mashups)

- News mashups
 - Optevi News Tracker
 - Mashups of news feeds and semantic web services
 - RSS Feeds
 - ClearForest Semantic Web Services
 - Natural language processing such as text extraction and event detection in a standard web service
 - Input to the web service is text
 - Output format is XML or a formatted web page
 - The result shows relationships from the input text can be integrated into another application or a web site

E-Learning 2.0

E-Learning 1.0	E-Learning 2.0
learning environment = an isle <i>in the net</i> with contents and tools	learning environment = a portal <i>to the net</i> with contents and tools
teacher conveys all learning resources onto the "isle"	teacher provides guideposts to external resources, aggregates resources from the net
learner uses the materials and tools provided by the learning environment.	learner configures his/her personal (learning) work environment

TERIMA KASIH